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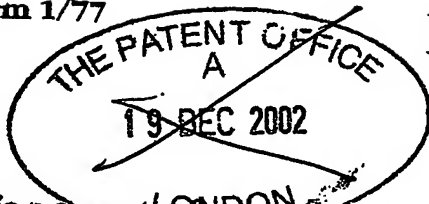
Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

Signed

Dated 7 January 2004

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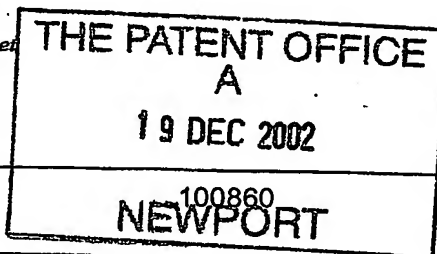


The  
Patent  
Office

1/77  
19 DEC 2002 E772104-4 D02934  
P01/7700 0.00-0229526.9

# Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)



The Patent Office

Cardiff Road  
Newport  
Gwent NP9 1RH

1. Your reference

2. Patent application number

(The Patent Office will fill in this part)

0229526.9

3. Full name, address and postcode of the or of each applicant (underline all surnames)

AstraZeneca AB  
S-151 85 Sodertalje  
Sweden

Patents ADP number (if you know it)

7822448003

If the applicant is a corporate body, give the country/state of its incorporation

Sweden

4. Title of the invention

CHEMICAL COMPOUNDS

5. Name of your agent (if you have one)

Anne Williams

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

AstraZeneca UK Limited  
Global Intellectual Property  
Mereside, Alderley Park  
Macclesfield  
Cheshire SK10 4TG

Patents ADP number (if you know it)

8470577001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
  - b) there is an inventor who is not named as an applicant, or
  - c) any named applicant is a corporate body.
- See note (d))

## Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form.  
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Continuation sheets of this form

Description 77 /

Claim(s) 15 /

Abstract

Drawing(s)

CF

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents  
(please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature



Date

Authorised Signatory

18/12/2002

12. Name and daytime telephone number of person to contact in the United Kingdom

Jennifer C Bennett - 01625 230148

### Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

### Notes

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- Write your answers in capital letters using black ink or you may type them.
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- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
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CHEMICAL COMPOUNDS

The present invention relates to antibiotic compounds and in particular to antibiotic compounds containing substituted oxazolidinone and/or isoxazoline rings. This invention  
5 further relates to processes for their preparation, to intermediates useful in their preparation, to their use as therapeutic agents and to pharmaceutical compositions containing them.

The international microbiological community continues to express serious concern that the evolution of antibiotic resistance could result in strains against which currently available antibacterial agents will be ineffective. In general, bacterial pathogens may be  
10 classified as either Gram-positive or Gram-negative pathogens. Antibiotic compounds with effective activity against both Gram-positive and Gram-negative pathogens are generally regarded as having a broad spectrum of activity. The compounds of the present invention are regarded as effective against both Gram-positive and certain Gram-negative pathogens.

Gram-positive pathogens, for example Staphylococci, Enterococci, Streptococci and  
15 mycobacteria, are particularly important because of the development of resistant strains which are both difficult to treat and difficult to eradicate from the hospital environment once established. Examples of such strains are methicillin resistant staphylococcus (MRSA), methicillin resistant coagulase negative staphylococci (MRCNS), penicillin resistant Streptococcus pneumoniae and multiply resistant Enterococcus faecium.

20 The major clinically effective antibiotic for treatment of such resistant Gram-positive pathogens is vancomycin. Vancomycin is a glycopeptide and is associated with various toxicities including nephrotoxicity. Furthermore, and most importantly, antibacterial resistance to vancomycin and other glycopeptides is also appearing. This resistance is increasing at a steady rate rendering these agents less and less effective in the treatment of  
25 Gram-positive pathogens. There is also now increasing resistance appearing towards agents such as  $\beta$ -lactams, quinolones and macrolides used for the treatment of upper respiratory tract infections, also caused by certain Gram negative strains including H.influenzae and M.catarrhalis.

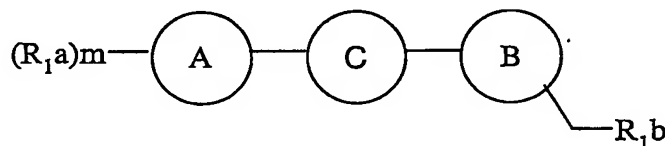
Certain antibacterial compounds containing an oxazolidinone ring have been described  
30 in the art (for example, Walter A. Gregory et al in J.Med.Chem. 1990, 33, 2569-2578 and 1989, 32(8), 1673-81; Chung-Ho Park et al in J.Med.Chem. 1992, 35, 1156-1165). Bacterial resistance to known antibacterial agents may develop, for example, by (i) the evolution of active binding sites in the bacteria rendering a previously active pharmacophore less effective



or redundant, and/or (ii) the evolution of means to chemically deactivate a given pharmacophore, and/or (iii) the evolution of efflux pathways. Therefore, there remains an ongoing need to find new antibacterial agents with a favourable pharmacological profile, in particular for compounds containing new, more potent, pharmacophores.

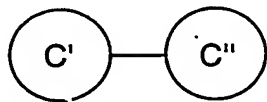
- 5 We have discovered a class of bi-aryl antibiotic compounds containing two substituted oxazolidinone and/or isoxazoline rings which has useful activity against Gram-positive pathogens including MRSA and MRCNS and, in particular, against various strains exhibiting resistance to vancomycin and/or linezolid and against *B. faecium* strains resistant to both aminoglycosides and clinically used  $\beta$ -lactams, but also to fastidious Gram negative strains
- 10 such as *H. influenzae*, *M. catarrhalis*, mycoplasma spp. and chlamydial strains. The compounds of the invention contain two groups capable of acting as pharmacophores. The two groups may independently bind at pharmacophore binding sites where the sites may be similar or different, where the similar or different sites may be occupied simultaneously or not simultaneously within a single organism, or where the relative importance of different binding
- 15 modes to the similar or different sites may vary between two organisms of different genus. Alternatively one of the groups may bind at a pharmacophore binding site whilst the other group fulfills a different role in the mechanism of action.

Accordingly the present invention provides a compound of the formula (I), or a pharmaceutically-acceptable salt, or an in-vivo-hydrolysable ester thereof,

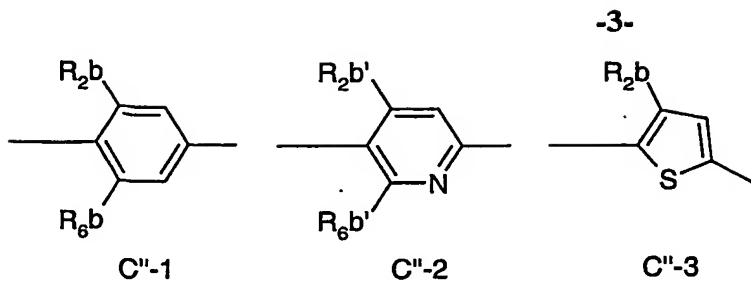


(I)

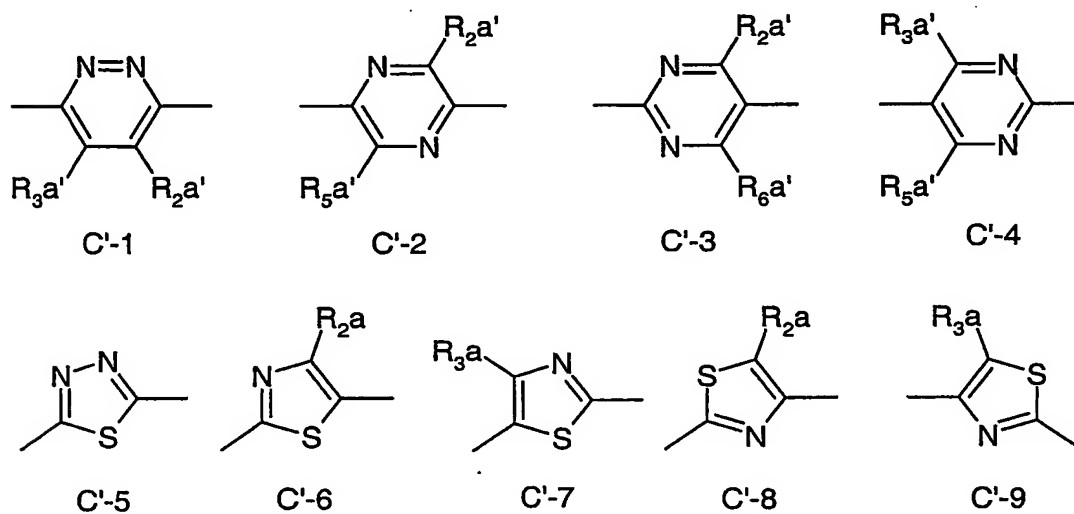
wherein in (I) C is a biaryl group C'-C''



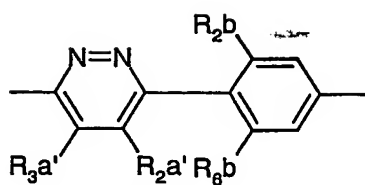
- 25 wherein C'' is an heteroaryl- or aryl-group selected from benzen-1,4-diyl, thien-2,5-diyl, and pyrid-2,5-diyl as shown in C''-1 to C''-3 below



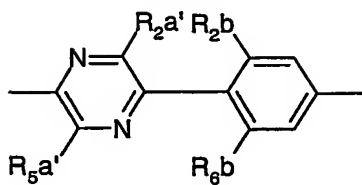
and C' is an heteroaryl-group selected from pyridazin-3,6-diyl, pyrazin-2,5-diyl, pyrimidin-2,5-diyl (in either orientation), 1,3,4-thiadiazol-2,5-diyl, thiazol-2,5-diyl (in either orientation), and thiazol-2,4-diyl (in either orientation) as shown in C'-1 to C'-9 below:



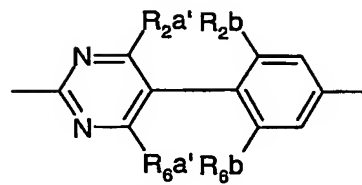
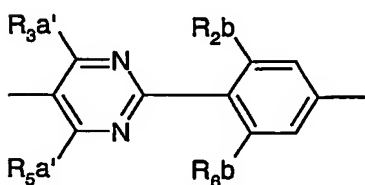
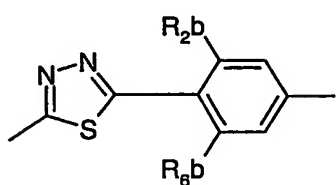
such that the central fragment C is represented by any one of the groups D to AD below:



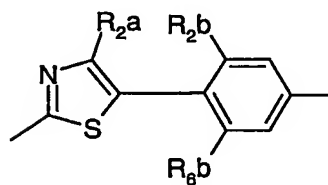
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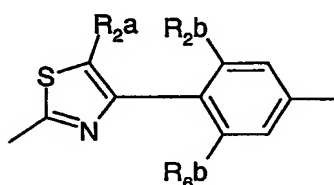
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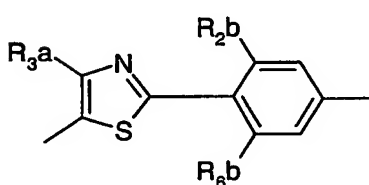
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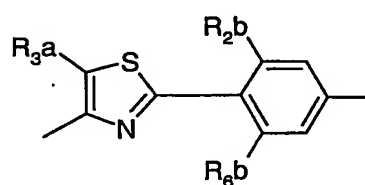
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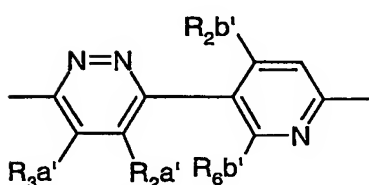
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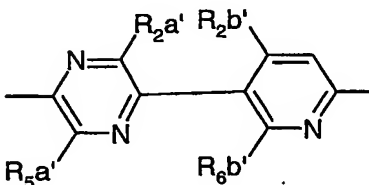
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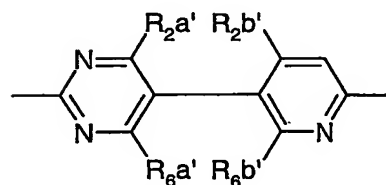
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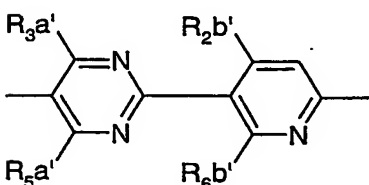
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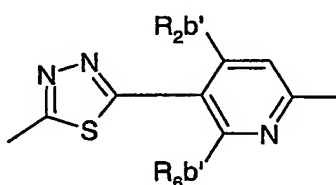
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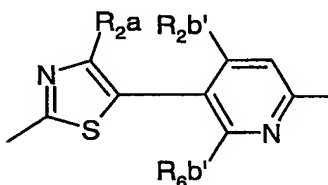
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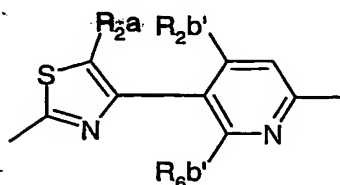
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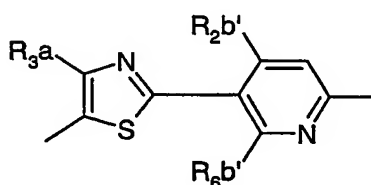
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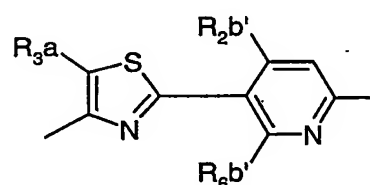
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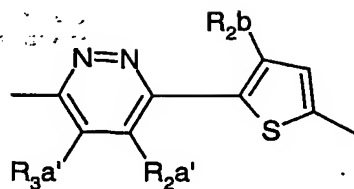


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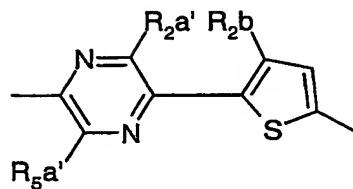


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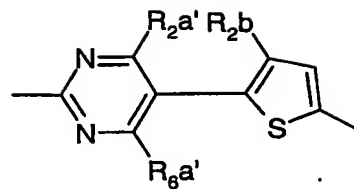
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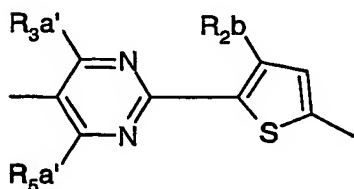
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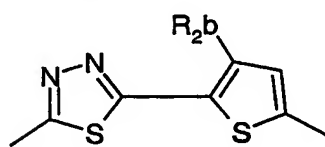
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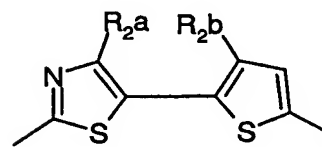
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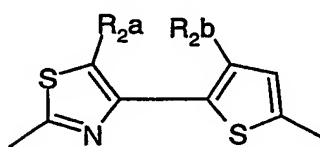
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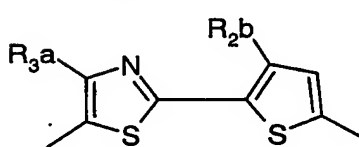
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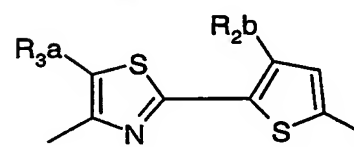
AA



AB



AC

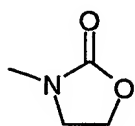


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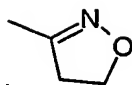
wherein the groups D to AD are attached to rings A and B in the orientation shown [(A-C') and (C''-B)];

wherein A and B are independently selected from

i)



ii)



and

- wherein A is linked as shown in (I) via the 3-position to ring C' of group C and independently substituted in the 4 and 5 positions as shown in (I) by one or more substituents  $-(R_1a)_m$ ; and wherein B is linked as shown in (I) via the 3-position to ring C'' of group C and independently substituted in the 5 position as shown in (I) by substituent  $-CH_2-R_1b$ ;  $R_2b$  and  $R_6b$  are independently selected from H, F, Cl, OMe, Me, Et and  $CF_3$ ;  $R_2b'$  and  $R_6b'$  are independently selected from H, OMe, Me, Et and  $CF_3$ ;
- 10  $R_2a$  is independently selected from H, Br, F, Cl, OMe, SMe, Me, Et and  $CF_3$ ;  $R_2a'$  and  $R_6a'$  are independently selected from H, OMe, SMe, Me, Et and  $CF_3$ ;  $R_3a$  is independently selected from H, (1-4C)alkyl, Br, F, Cl, OH, (1-4C)alkoxy,  $-S(O)_n(1-4C)alkyl$  (wherein  $n = 0, 1, \text{ or } 2$ ), amino, (1-4C)alkylcarbonylamino-, nitro, cyano,  $-CHO$ ,  $-CO(1-4C)alkyl$ ,  $-CONH_2$  and  $-CONH(1-4C)alkyl$ ;
- 15  $R_3a'$  and  $R_5a'$  are independently selected from H, (1-4C)alkyl, OH, (1-4C)alkoxy, (1-4C)alkylthio, amino, (1-4C)alkylcarbonylamino-, nitro, cyano,  $-CHO$ ,  $-CO(1-4C)alkyl$ ,  $-CONH_2$  and  $-CONH(1-4C)alkyl$ ; wherein one of  $R_3a$ ,  $R_3a'$ ,  $R_5a'$  taken together with a substituent  $R_1a$  at position 4 of ring A and rings A and C' may form a 5-7 membered ring;
- 20 wherein any (1-4C)alkyl group may be optionally substituted with F, OH, (1-4C)alkoxy,  $-S(O)_n(1-4C)alkyl$  (wherein  $n = 0, 1, \text{ or } 2$ ) or cyano; wherein when ring C' is a diazine ring (D, E, F, G, M, N, O, P, V, W, X, Y) one of the ring nitrogens may optionally be oxidised to an N-oxide;  $R_1a$  is independently selected from  $R_1a1$  to  $R_1a4$  below:
- 25  $R_1a1$ : AR1, AR2, AR2a, AR2b, AR3, AR3a, AR3b, AR4, AR4a, CY1, CY2;  
 $R_1a2$ : cyano, carboxy, (1-4C)alkoxycarbonyl,  $-C(=W)NR_vR_w$  [wherein W is O or S,  $R_v$  and  $R_w$  are independently H, or (1-4C)alkyl and wherein  $R_v$  and  $R_w$  taken together with the amide or thioamide nitrogen to which they are attached can form a 5-7 membered ring optionally with an additional heteroatom selected from N, O,  $S(O)_n$  in place of 1 carbon atom
- 30 of the so formed ring; wherein when said ring is a piperazine ring, the ring may be optionally substituted on the additional nitrogen by a group selected from (1-4C)alkyl, (1-4C)cycloalkyl,

- (1-4C)acyl, -COO(1-4C)alkyl, S(O)<sub>n</sub>(1-4C)alkyl (wherein n = 1 or 2), -COOAR1, -CS(1-4C)alkyl and -C(=S)O(1-4C)alkyl; wherein any (1-4C)alkyl, (1-4C)acyl and (1-4C)cycloalkyl substituent may itself be substituted by cyano, hydroxy or halo, provided that, such a substituent is not on a carbon adjacent to a nitrogen atom of the piperazine ring],
- 5 ethenyl, 2-(1-4C)alkylethenyl, 2-cyanoethenyl, 2-cyano-2-((1-4C)alkyl)ethenyl, 2-nitroethenyl, 2-nitro-2-((1-4C)alkyl)ethenyl, 2-((1-4C)alkylaminocarbonyl)ethenyl, 2-((1-4C)alkoxycarbonyl)ethenyl, 2-(AR1)ethenyl, 2-(AR2)ethenyl, 2-(AR2a)ethenyl;
- R<sub>1a3</sub>: (1-10C)alkyl  
 {optionally substituted by one or more groups (including geminal disubstitution) each
- 10 independently selected from hydroxy, (1-10C)alkoxy, (1-4C)alkoxy-(1-4C)alkoxy, (1-4C)alkoxy-(1-4C)alkoxy-(1-4C)alkoxy, (1-4C)alkylcarbonyl, phosphoryl [-O-P(O)(OH)<sub>2</sub>, and mono- and di-(1-4C)alkoxy derivatives thereof], phosphiryl [-O-P(OH)<sub>2</sub> and mono- and di-(1-4C)alkoxy derivatives thereof], and amino; and/or optionally substituted by one group selected from carboxy, phosphonate [phosphono, -P(O)(OH)<sub>2</sub>, and mono- and
- 15 di-(1-4C)alkoxy derivatives thereof], phosphinate [-P(OH)<sub>2</sub> and mono- and di-(1-4C)alkoxy derivatives thereof], cyano, halo, trifluoromethyl, (1-4C)alkoxycarbonyl, (1-4C)alkoxy-(1-4C)alkoxycarbonyl, (1-4C)alkoxy-(1-4C)alkoxy-(1-4C)alkoxycarbonyl, (1-4C)alkylamino, di((1-4C)alkyl)amino, (1-6C)alkanoylamino-, (1-4C)alkoxycarbonylamino-, N-(1-4C)alkyl-N-(1-6C)alkanoylamino-, -C(=W)NR<sub>v</sub>R<sub>w</sub> [wherein W is O or S, R<sub>v</sub> and R<sub>w</sub> are
- 20 independently H, or (1-4C)alkyl and wherein R<sub>v</sub> and R<sub>w</sub> taken together with the amide or thioamide nitrogen to which they are attached can form a 5-7 membered ring optionally with an additional heteroatom selected from N, O, S(O)<sub>n</sub> in place of 1 carbon atom of the so formed ring; wherein when said ring is a piperazine ring, the ring may be optionally substituted on the additional nitrogen by a group selected from (1-4C)alkyl, (1-4C)cycloalkyl,
- 25 (1-4C)acyl, -COO(1-4C)alkyl, S(O)<sub>n</sub>(1-4C)alkyl (wherein n = 1 or 2), -COOAR1, -CS(1-4C)alkyl and -C(=S)O(1-4C)alkyl; (=NOR<sub>v</sub>) wherein R<sub>v</sub> is as hereinbefore defined, (1-4C)alkylS(O)<sub>p</sub>NH-, (1-4C)alkylS(O)<sub>p</sub>-((1-4C)alkyl)N-, fluoro(1-4C)alkylS(O)<sub>p</sub>NH-, fluoro(1-4C)alkylS(O)<sub>p</sub>-((1-4C)alkyl)N-, (1-4C)alkylS(O)<sub>q</sub>-, CY1, CY2, AR1, AR2, AR3, AR1-O-, AR2-O-, AR3-O-, AR1-S(O)<sub>q</sub>-, AR2-S(O)<sub>q</sub>-, AR3-S(O)<sub>q</sub>-, AR1-NH-, AR2-NH-,
- 30 AR3-NH- (p is 1 or 2 and q is 0, 1 or 2), and also AR2a, AR2b, AR3a and AR3b versions of AR2 and AR3 containing groups}; wherein any (1-4C)alkyl, (1-4C)acyl and (1-4C)cycloalkyl group present in any substituent on R<sub>1a3</sub> may itself be substituted by one or two groups

selected from cyano, hydroxy, halo, amino, (1-4C)alkylamino and di(1-4C)alkylamino, provided that such a substituent is not on a carbon adjacent to a heteroatom if present;

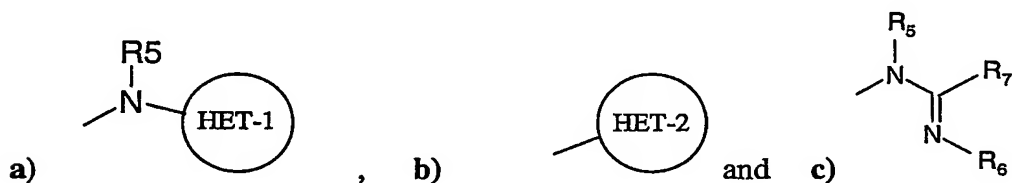
R<sub>1a4</sub>: R<sub>14</sub>C(O)O(1-6C)alkyl wherein R<sub>14</sub> is AR1, AR2, AR2a, AR2b, (1-4C)alkylamino, benzyloxy-(1-4C)alkyl or (1-10C)alkyl {optionally substituted as defined for (R<sub>1a3</sub>)};

5 m is 0, 1 or 2;

wherein two substituents R<sub>1a</sub> at the 4 or 5 position of ring A taken together may form a 5 to 7 membered spiro ring;

wherein two substituents R<sub>1a</sub> at the 4 and 5 positions of ring A taken together may form a 5 to 7 membered fused ring;

10 R<sub>1b</sub> is independently selected from hydroxy, -OSi(tri-(1-6C)alkyl) (wherein the 3 (1-6C)alkyl groups are independently selected from all possible (1-6C)alkyl groups), -NR<sub>5</sub>C(=W)R<sub>4</sub>, -OC(=O)R<sub>4</sub>,



15

wherein W is O or S;

R<sub>4</sub> is hydrogen, amino, (1-8C)alkyl, -NHR<sub>12</sub>, -N(R<sub>12</sub>)(R<sub>13</sub>), -OR<sub>12</sub> or -SR<sub>12</sub>, (2-4C)alkenyl, -(1-8C)alkylaryl, mono-, di-, tri- and per-halo(1-8C)alkyl, -(CH<sub>2</sub>)<sub>p</sub>(3-6C)cycloalkyl or -(CH<sub>2</sub>)<sub>p</sub>(3-6C)cycloalkenyl wherein p is 0, 1 or 2;

20 R<sub>5</sub> is hydrogen, (3-6C)cycloalkyl, phenyloxycarbonyl, tert-butoxycarbonyl, fluorenyloxycarbonyl, benzyloxycarbonyl, (1-6C)alkyl (optionally substituted by cyano or (1-4C)alkoxycarbonyl), -CO<sub>2</sub>R<sub>8</sub>, -C(=O)R<sub>8</sub>, -C(=O)SR<sub>8</sub>, -C(=S)R<sub>8</sub>, P(O)(OR<sub>9</sub>)(OR<sub>10</sub>) and -SO<sub>2</sub>R<sub>11</sub>, wherein R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub> and R<sub>11</sub> are as defined hereinbelow;

HET-1 is selected from HET-1A and HET-1B wherein:

25 HET-1A is a C-linked 5-membered heteroaryl ring containing 2 to 4 heteroatoms independently selected from N, O and S; which ring is optionally substituted on a C atom by an oxo or thioxo group; and/or which ring is optionally substituted on any available C atom by one or two substituents selected from RT as hereinafter defined and/or on an available nitrogen atom, (provided that the ring is not thereby quaternised) by (1-4C)alkyl;

30 HET-1B is a C-linked 6-membered heteroaryl ring containing 2 or 3 nitrogen heteroatoms,

which ring is optionally substituted on a C atom by an oxo or thioxo group; and/or which ring is optionally substituted on any available C atom by one, two or three substituents selected from RT as hereinafter defined and/or on an available nitrogen atom, (provided that the ring is not thereby quaternised) by (1-4C)alkyl;

5 HET-2 is selected from HET-2A and HET-2B wherein

HET-2A is an N-linked 5-membered, fully or partially unsaturated heterocyclic ring, containing either (i) 1 to 3 further nitrogen heteroatoms or (ii) a further heteroatom selected from O and S together with an optional further nitrogen heteroatom; which ring is optionally substituted on a C atom, other than a C atom adjacent to the linking N atom, by an oxo or

10 thioxo group; and/or which ring is optionally substituted on any available C atom, other than a C atom adjacent to the linking N atom, by a substituent selected from RT as hereinafter defined and/or on an available nitrogen atom, other than a N atom adjacent to the linking N atom, (provided that the ring is not thereby quaternised) by (1-4C)alkyl;

HET-2B is an N-linked 6-membered di-hydro-heteroaryl ring containing up to three nitrogen

15 heteroatoms in total (including the linking heteroatom), which ring is substituted on a suitable C atom, other than a C atom adjacent to the linking N atom, by oxo or thioxo and/or which ring is optionally substituted on any available C atom, other than a C atom adjacent to the linking N atom, by one or two substituents independently selected from RT as hereinafter defined and/or on an available nitrogen atom, other than a N atom adjacent to the linking N  
20 atom, (provided that the ring is not thereby quaternised) by (1-4C)alkyl;

RT is selected from a substituent from the group:

(RTa1) hydrogen, halogen, (1-4C)alkoxy, (2-4C)alkenyloxy, (2-4C)alkenyl, (2-4C)alkynyl, (3-6C)cycloalkyl, (3-6C)cycloalkenyl, (1-4C)alkylthio, amino, azido, cyano and nitro; or

25 (RTa2) (1-4C)alkylamino, di-(1-4C)alkylamino, and (2-4C)alkenylamino;  
or RT is selected from the group

(RTb1) (1-4C)alkyl group which is optionally substituted by one substituent selected from hydroxy, (1-4C)alkoxy, (1-4C)alkylthio, cyano and azido; or

(RTb2) (1-4C)alkyl group which is optionally substituted by one substituent selected  
30 from (2-4C)alkenyloxy, (3-6C)cycloalkyl, and (3-6C)cycloalkenyl;

or RT is selected from the group

(RTc) a fully saturated 4-membered monocyclic ring containing 1 or 2 heteroatoms independently selected from O, N and S (optionally oxidised), and linked via a ring nitrogen



or carbon atom;

and wherein at each occurrence of an RT substituent containing an alkyl, alkenyl, alkynyl, cycloalkyl or cycloalkenyl moiety in (RTa1) or (RTa2), (RTb1) or (RTb2), or (RTc) each such moiety is optionally substituted on an available carbon atom with one, two, three or more

5 substituents independently selected from F, Cl, Br, OH and CN;

R<sub>6</sub> is cyano, -COR<sub>12</sub>, -COOR<sub>12</sub>, -CONHR<sub>12</sub>, -CON(R<sub>12</sub>)(R<sub>13</sub>), -SO<sub>2</sub>R<sub>12</sub>, -SO<sub>2</sub>NHR<sub>12</sub>, -SO<sub>2</sub>N(R<sub>12</sub>)(R<sub>13</sub>) or NO<sub>2</sub>, wherein R<sub>12</sub> and R<sub>13</sub> are as defined hereinbelow;

R<sub>7</sub> is hydrogen, amino, (1-8C)alkyl, -NHR<sub>12</sub>, -N(R<sub>12</sub>)(R<sub>13</sub>), -OR<sub>12</sub> or -SR<sub>12</sub>, (2-4C)alkenyl, -(1-8C)alkylaryl, mono-, di-, tri- and per-halo(1-8C)alkyl, -(CH<sub>2</sub>)<sub>p</sub>(3-6C)cycloalkyl or

10 -(CH<sub>2</sub>)<sub>p</sub>(3-6C)cycloalkenyl wherein p is 0, 1 or 2;

R<sub>8</sub> is hydrogen, (3-6C)cycloalkyl, phenyl, benzyl, (1-5C)alkanoyl, (1-6C)alkyl (optionally substituted by substituents independently selected from (1-5C)alkoxycarbonyl, hydroxy, cyano, up to 3 halogen atoms and -NR<sub>15</sub>R<sub>16</sub> (wherein R<sub>15</sub> and R<sub>16</sub> are independently selected from hydrogen, phenyl (optionally substituted with one or more substituents selected from

15 halogen, (1-4C)alkyl and (1-4C)alkyl substituted with one, two, three or more halogen atoms) and (1-4C)alkyl (optionally substituted with one, two, three or more halogen atoms), or for any N(R<sub>15</sub>)(R<sub>16</sub>) group, R<sub>15</sub> and R<sub>16</sub> may additionally be taken together with the nitrogen atom to which they are attached to form a pyrrolidinyl, piperidinyl or morpholinyl ring);

R<sub>9</sub> and R<sub>10</sub> are independently selected from hydrogen and (1-4C)alkyl;

20 R<sub>11</sub> is (1-4C)alkyl or phenyl;

R<sub>12</sub> and R<sub>13</sub> are independently selected from hydrogen, phenyl (optionally substituted with one or more substituents selected from halogen, (1-4C)alkyl and (1-4C)alkyl substituted with one, two, three or more halogen atoms) and (1-4C)alkyl (optionally substituted with one, two, three or more halogen atoms), or for any N(R<sub>12</sub>)(R<sub>13</sub>) group, R<sub>12</sub> and R<sub>13</sub> may additionally be

25 taken together with the nitrogen atom to which they are attached to form an unsubstituted or substituted pyrrolidinyl, piperidinyl or morpholinyl ring, which ring may be optionally substituted by a group selected from (1-4C)alkyl, (1-4C)cycloalkyl, (1-4C)acyl, -COO(1-4C)alkyl, S(O)<sub>n</sub>(1-4C)alkyl (wherein n = 1 or 2), -COOAR<sub>1</sub>, -CS(1-4C)alkyl and -C(=S)O(1-4C)alkyl;

30 AR<sub>1</sub> is an optionally substituted phenyl or optionally substituted naphthyl;

AR<sub>2</sub> is an optionally substituted 5- or 6-membered, fully unsaturated (i.e with the maximum degree of unsaturation) monocyclic heteroaryl ring containing up to four heteroatoms independently selected from O, N and S (but not containing any O-O, O-S or S-S bonds), and

linked via a ring carbon atom, or a ring nitrogen atom if the ring is not thereby quaternised;  
**AR2a** is a partially hydrogenated version of AR2 (i.e. AR2 systems retaining some, but not the full, degree of unsaturation), linked via a ring carbon atom or linked via a ring nitrogen atom if the ring is not thereby quaternised;

- 5 **AR2b** is a fully hydrogenated version of AR2 (i.e. AR2 systems having no unsaturation), linked via a ring carbon atom or linked via a ring nitrogen atom;

**AR3** is an optionally substituted 8-, 9- or 10-membered, fully unsaturated (i.e with the maximum degree of unsaturation) bicyclic heteroaryl ring containing up to four heteroatoms independently selected from O, N and S (but not containing any O-O, O-S or S-S bonds), and

- 10 linked via a ring carbon atom in either of the rings comprising the bicyclic system;

**AR3a** is a partially hydrogenated version of AR3 (i.e. AR3 systems retaining some, but not the full, degree of unsaturation); linked via a ring carbon atom, or linked via a ring nitrogen atom if the ring is not thereby quaternised, in either of the rings comprising the bicyclic system;

- 15 **AR3b** is a fully hydrogenated version of AR3 (i.e. AR3 systems having no unsaturation), linked via a ring carbon atom, or linked via a ring nitrogen atom, in either of the rings comprising the bicyclic system;

**AR4** is an optionally substituted 13- or 14-membered, fully unsaturated (i.e with the maximum degree of unsaturation) tricyclic heteroaryl ring containing up to four heteroatoms

- 20 independently selected from O, N and S (but not containing any O-O, O-S or S-S bonds), and linked via a ring carbon atom in any of the rings comprising the tricyclic system;

**AR4a** is a partially hydrogenated version of AR4 (i.e. AR4 systems retaining some, but not the full, degree of unsaturation), linked via a ring carbon atom, or linked via a ring nitrogen atom if the ring is not thereby quaternised, in any of the rings comprising the tricyclic system;

- 25 **CY1** is an optionally substituted cyclobutyl, cyclopentyl or cyclohexyl ring;

**CY2** is an optionally substituted cyclopentenyl or cyclohexenyl ring;

wherein; optional substituents on AR1, AR2, AR2a, AR2b, AR3, AR3a, AR3b, AR4, AR4a, CY1 and CY2 are (on an available carbon atom) up to three substituents independently selected from (1-4C)alkyl {optionally substituted by substituents selected independently from

- 30 hydroxy, trifluoromethyl, (1-4C)alkyl S(O)<sub>q</sub>- (q is 0, 1 or 2), (1-4C)alkoxy, (1-4C)alkoxycarbonyl, cyano, nitro, (1-4C)alkanoylamino, -CONR<sub>v</sub>R<sub>w</sub> or -NR<sub>v</sub>R<sub>w</sub>}, trifluoromethyl, hydroxy, halo, nitro, cyano, thiol, (1-4C)alkoxy, (1-4C)alkanoyloxy, dimethylaminomethyleneaminocarbonyl, di(N-(1-4C)alkyl)aminomethylimino, carboxy,

(1-4C)alkoxycarbonyl, (1-4C)alkanoyl, (1-4C)alkylSO<sub>2</sub>amino, (2-4C)alkenyl { optionally substituted by carboxy or (1-4C)alkoxycarbonyl}, (2-4C)alkynyl, (1-4C)alkanoylamino, oxo (=O), thioxo (=S), (1-4C)alkanoylamino { the (1-4C)alkanoyl group being optionally substituted by hydroxy}, (1-4C)alkyl S(O)<sub>q</sub>- (q is 0, 1 or 2) {the (1-4C)alkyl group being

5 optionally substituted by one or more groups independently selected from cyano, hydroxy and (1-4C)alkoxy}, -CONR<sub>v</sub>R<sub>w</sub> or -NR<sub>v</sub>R<sub>w</sub> [wherein R<sub>v</sub> is hydrogen or (1-4C)alkyl; R<sub>w</sub> is hydrogen or (1-4C)alkyl];

and further optional substituents on AR1, AR2, AR2a, AR2b, AR3, AR3a, AR3b, AR4, AR4a, CY1 and CY2 (on an available carbon atom), and also on alkyl groups (unless

10 indicated otherwise) are up to three substituents independently selected from trifluoromethoxy, benzoylamino, benzoyl, phenyl {optionally substituted by up to three substituents independently selected from halo, (1-4C)alkoxy or cyano}, furan, pyrrole, pyrazole, imidazole, triazole, pyrimidine, pyridazine, pyridine, isoxazole, oxazole, isothiazole, thiazole, thiophene, hydroxyimino(1-4C)alkyl, (1-4C)alkoxyimino(1-4C)alkyl, halo-

15 (1-4C)alkyl, (1-4C)alkanesulfonamido, -SO<sub>2</sub>NR<sub>v</sub>R<sub>w</sub> [wherein R<sub>v</sub> is hydrogen or (1-4C)alkyl; R<sub>w</sub> is hydrogen or (1-4C)alkyl]; and

optional substituents on AR2, AR2a, AR2b, AR3, AR3a, AR3b, AR4 and AR4a are (on an available nitrogen atom, where such substitution does not result in quaternization)

(1-4C)alkyl, (1-4C)alkanoyl {wherein the (1-4C)alkyl and (1-4C)alkanoyl groups are

20 optionally substituted by (preferably one) substituents independently selected from cyano, hydroxy, nitro, trifluoromethyl, (1-4C)alkyl S(O)<sub>q</sub>- (q is 0, 1 or 2), (1-4C)alkoxy, (1-4C)alkoxycarbonyl, (1-4C)alkanoylamino, -CONR<sub>v</sub>R<sub>w</sub> or -NR<sub>v</sub>R<sub>w</sub> [wherein R<sub>v</sub> is hydrogen or (1-4C)alkyl; R<sub>w</sub> is hydrogen or (1-4C)alkyl]}, (2-4C)alkenyl, (2-4C)alkynyl, (1-4C)alkoxycarbonyl or oxo (to form an N-oxide).

25

In this specification, HET-1A and HET-1B are fully unsaturated ring systems.

In this specification, HET-2A may be a fully or partially unsaturated heterocyclic ring, provided there is some degree of unsaturation in the ring.

Particular examples of 5-membered heteroaryl rings containing 2 to 4 heteroatoms

30 independently selected from N, O and S (with no O-O, O-S or S-S bonds) are pyrazole, imidazole, 1,2,3-triazole, 1,2,4-triazole, oxazole, isoxazole, thiazole, 1,2,3-oxadiazole, 1,2,4-oxadiazole, 1,2,5-oxadiazole, 1,3,4-oxadiazole, isothiazole, 1,2,5-thiadiazole, 1,2,4-thiadiazole and 1,2,3-thiadiazole.

Particular examples of 6-membered heteroaryl ring systems containing up to three nitrogen heteroatoms are pyrimidine, pyridazine, pyrazine, 1,2,3-triazine, 1,2,4-triazine and 1,3,5-triazine.

Particular examples of N-linked 5-membered, fully or partially unsaturated  
5 heterocyclic rings, containing either (i) 1 to 3 further nitrogen heteroatoms or (ii) a further heteroatom selected from O and S together with an optional further nitrogen heteroatom include, for example, pyrazole, imidazole, 1,2,3-triazole (preferably 1,2,3-triazol-1-yl), 1,2,4-triazole (preferably 1,2,4-triazol-1-yl) and tetrazole (preferably tetrazol-2-yl) and furazan.

Particular examples of N-linked 6-membered di-hydro-heteroaryl rings containing up  
10 to three nitrogen heteroatoms in total (including the linking heteroatom) include di-hydro versions of pyrimidine, pyridazine, pyrazine, 1,2,3-triazine, 1,2,4-triazine, 1,3,5-triazine and pyridine.

Particular examples of halogen-substituted alkyl substituents in HET-1 and HET-2 are monofluoromethyl, difluoromethyl and trifluoromethyl.

15 A particular example of  $R_8$  as a halogen-substituted alkyl group is trifluoromethyl.

In this specification the term 'alkyl' includes straight chained and branched structures. For example, (1-4C)alkyl includes propyl and isopropyl. However, references to individual alkyl groups such as "propyl" are specific for the straight chained version only, and references to individual branched chain alkyl groups such as "isopropyl" are specific for the branched  
20 chain version only. A similar convention applies to other radicals, for example halo(1-4C)alkyl includes 1-bromoethyl and 2-bromoethyl.

In this specification, the terms 'alkenyl' and 'cycloalkenyl' include all positional and geometrical isomers.

In this specification, the term 'aryl' is an unsubstituted carbocyclic aromatic group, in  
25 particular phenyl, 1- and 2-naphthyl.

In this specification, where it is stated that a ring may be linked via an  $sp^2$  carbon atom it is to be understood that the ring is linked via one of the carbon atoms in a C=C double bond.

For the avoidance of doubt, reference to a carbon atom in HET1 or HET2 being substituted by an oxo or thioxo group means replacement of a  $CH_2$  by C=O or C=S  
30 respectively.

There follow particular and suitable values for certain substituents and groups referred to in this specification. These values may be used where appropriate with any of the

definitions and embodiments disclosed hereinbefore, or hereinafter. For the avoidance of doubt each stated species represents a particular and independent aspect of this invention.

Examples of **(1-4C)alkyl** and **(1-5C)alkyl** include methyl, ethyl, propyl, isopropyl and t-butyl; examples of **(1-6C)alkyl** include methyl, ethyl, propyl, isopropyl, t-butyl, pentyl and  
 5 hexyl; examples of **(1-10C)alkyl** include methyl, ethyl, propyl, isopropyl, pentyl, hexyl, heptyl, octyl and nonyl; examples of **(1-4C)alkanoylamino-(1-4C)alkyl** include formamidomethyl, acetamidomethyl and acetamidoethyl; examples of **hydroxy(1-4C)alkyl** and **hydroxy(1-6C)alkyl** include hydroxymethyl, 1-hydroxyethyl, 2-hydroxyethyl and 3-hydroxypropyl; examples of **(1-4C)alkoxycarbonyl** include methoxycarbonyl,  
 10 ethoxycarbonyl and propoxycarbonyl; examples of **(1-5C)alkoxycarbonyl** include methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl and pentoxycarbonyl; examples of **2-((1-4C)alkoxycarbonyl)ethenyl** include 2-(methoxycarbonyl)ethenyl and 2-(ethoxycarbonyl)ethenyl; examples of **2-cyano-2-((1-4C)alkyl)ethenyl** include 2-cyano-2-methylethenyl and 2-cyano-2-ethylethenyl; examples of **2-nitro-2-((1-4C)alkyl)ethenyl**  
 15 include 2-nitro-2-methylethenyl and 2-nitro-2-ethylethenyl; examples of **2-((1-4C)alkylaminocarbonyl)ethenyl** include 2-(methylaminocarbonyl)ethenyl and 2-(ethylaminocarbonyl)ethenyl; examples of **(2-4C)alkenyl** include allyl and vinyl; examples of **(2-4C)alkynyl** include ethynyl and 2-propynyl; examples of **(1-4C)alkanoyl** include formyl, acetyl and propionyl; examples of **(1-4C)alkoxy** include methoxy, ethoxy and  
 20 propoxy; examples of **(1-6C)alkoxy** and **(1-10C)alkoxy** include methoxy, ethoxy, propoxy and pentoxy; examples of **(1-4C)alkylthio** include methylthio and ethylthio; examples of **(1-4C)alkylamino** include methylamino, ethylamino and propylamino; examples of **di-((1-4C)alkyl)amino** include dimethylamino, N-ethyl-N-methylamino, diethylamino, N-methyl-N-propylamino and dipropylamino; examples of **halo** groups include fluoro, chloro  
 25 and bromo; examples of **(1-4C)alkylsulfonyl** include methylsulfonyl and ethylsulfonyl; examples of **(1-4C)alkoxy-(1-4C)alkoxy** and **(1-6C)alkoxy-(1-6C)alkoxy** include methoxymethoxy, 2-methoxyethoxy, 2-ethoxyethoxy and 3-methoxypropoxy; examples of **(1-4C)alkoxy-(1-4C)alkoxy-(1-4C)alkoxy** include 2-(methoxymethoxy)ethoxy, 2-(2-methoxyethoxy)ethoxy; 3-(2-methoxyethoxy)propoxy and 2-(2-ethoxyethoxy)ethoxy;  
 30 examples of **(1-4C)alkylS(O)<sub>2</sub>amino** include methylsulfonylamino and ethylsulfonylamino; examples of **(1-4C)alkanoylamino** and **(1-6C)alkanoylamino** include formamido, acetamido and propionylamino; examples of **(1-4C)alkoxycarbonylamino** include methoxycarbonylamino and ethoxycarbonylamino; examples of **N-(1-4C)alkyl-N-**

(1-6C)alkanoylamino include N-methylacetamido, N-ethylacetamido and N-methylpropionamido; examples of (1-4C)alkylS(O)<sub>p</sub>NH- wherein p is 1 or 2 include methylsulfinylamino, methylsulfonylamino, ethylsulfinylamino and ethylsulfonylamino; examples of (1-4C)alkylS(O)<sub>p</sub>((1-4C)alkyl)N- wherein p is 1 or 2 include

5 methylsulfinylmethylamino, methylsulfonylmethylamino, 2-(ethylsulfinyl)ethylamino and 2-(ethylsulfonyl)ethylamino; examples of fluoro(1-4C)alkylS(O)<sub>p</sub>NH- wherein p is 1 or 2 include trifluoromethylsulfinylamino and trifluoromethylsulfonylamino; examples of fluoro(1-4C)alkylS(O)<sub>p</sub>((1-4C)alkyl)NH- wherein p is 1 or 2 include trifluoromethylsulfinylmethylamino and trifluoromethylsulfonylmethylamino examples of

10 (1-4C)alkoxy(hydroxy)phosphoryl include methoxy(hydroxy)phosphoryl and ethoxy(hydroxy)phosphoryl; examples of di-(1-4C)alkoxyphosphoryl include di-methoxyphosphoryl, di-ethoxyphosphoryl and ethoxy(methoxy)phosphoryl; examples of (1-4C)alkylS(O)<sub>q</sub>- wherein q is 0, 1 or 2 include methylthio, ethylthio, methylsulfinyl, ethylsulfinyl, methylsulfonyl and ethylsulfonyl; examples of phenylS(O)<sub>q</sub>

15 and naphthylS(O)<sub>q</sub>- wherein q is 0, 1 or 2 are phenylthio, phenylsulfinyl, phenylsulfonyl and naphthylthio, naphthylsulfinyl and naphthylsulfonyl respectively; examples of benzyloxy-(1-4C)alkyl include benzyloxymethyl and benzyloxyethyl; examples of a (3-4C)alkylene chain are trimethylene or tetramethylene; examples of (1-6C)alkoxy-(1-6C)alkyl include methoxymethyl, ethoxymethyl and 2-methoxyethyl; examples of hydroxy-(2-6C)alkoxy

20 include 2-hydroxyethoxy and 3-hydroxypropoxy; examples of (1-4C)alkylamino-(2-6C)alkoxy include 2-methylaminoethoxy and 2-ethylaminoethoxy; examples of di-(1-4C)alkylamino-(2-6C)alkoxy include 2-dimethylaminoethoxy and 2-diethylaminoethoxy; examples of -(1-8C)alkylaryl include benzyl and phenethyl; examples of (1-4C)alkylcarbamoyl include methylcarbamoyl and ethylcarbamoyl; examples

25 of di((1-4C)alkyl)carbamoyl include di(methyl)carbamoyl and di(ethyl)carbamoyl; examples of hydroxyimino(1-4C)alkyl include hydroxyiminomethyl, 2-(hydroxyimino)ethyl and 1-(hydroxyimino)ethyl; examples of (1-4C)alkoxyimino-(1-4C)alkyl include methoxyiminomethyl, ethoxyiminomethyl, 1-(methoxyimino)ethyl and 2-(methoxyimino)ethyl; examples of halo(1-4C)alkyl include, halomethyl, 1-haloethyl,

30 2-haloethyl, and 3-halopropyl; examples of nitro(1-4C)alkyl include nitromethyl, 1-nitroethyl, 2-nitroethyl and 3-nitropropyl; examples of amino(1-4C)alkyl include aminomethyl, 1-aminoethyl, 2-aminoethyl and 3-aminopropyl; examples of cyano(1-4C)alkyl include cyanomethyl, 1-cyanoethyl, 2-cyanoethyl and 3-cyanopropyl; examples of

- (1-4C)alkanesulfonamido include methanesulfonamido and ethanesulfonamido; examples of (1-4C)alkylaminosulfonyl include methylaminosulfonyl and ethylaminosulfonyl; and examples of di-(1-4C)alkylaminosulfonyl include dimethylaminosulfonyl, diethylaminosulfonyl and N-methyl-N-ethylaminosulfonyl; examples of
- 5 (1-4C)alkanesulfonyloxy include methylsulfonyloxy, ethylsulfonyloxy and propylsulfonyloxy; examples of (1-4C)alkanoyloxy include acetoxy; examples of (1-4C)alkylaminocarbonyl include methylaminocarbonyl and ethylaminocarbonyl; examples of di((1-4C)alkyl)aminocarbonyl include dimethylaminocarbonyl and diethylaminocarbonyl; examples of (3-8C)cycloalkyl include cyclopropyl, cyclobutyl,
- 10 cyclopentyl and cyclohexyl; examples of (4-7C)cycloalkyl include cyclobutyl, cyclopentyl and cyclohexyl; examples of (3-6C)cycloalkenyl include cyclopropenyl, cyclobutenyl, cyclopentenyl and cyclohexenyl; examples of di(N-(1-4C)alkyl)aminomethylimino include dimethylaminomethylimino and diethylaminomethylimino.

- Particular values for AR2 include, for example, for those AR2 containing one
- 15 heteroatom, furan, pyrrole, thiophene; for those AR2 containing one to four N atoms, pyrazole, imidazole, pyridine, pyrimidine, pyrazine, pyridazine, 1,2,3- & 1,2,4-triazole and tetrazole; for those AR2 containing one N and one O atom, oxazole, isoxazole and oxazine; for those AR2 containing one N and one S atom, thiazole and isothiazole; for those AR2 containing two N atoms and one S atom, 1,2,4- and 1,3,4-thiadiazole.

- 20 Particular examples of AR2a include, for example, dihydropyrrole (especially 2,5-dihydropyrrol-4-yl) and tetrahydropyridine (especially 1,2,5,6-tetrahydropyrid-4-yl).

- Particular examples of AR2b include, for example, tetrahydrofuran, pyrrolidine, morpholine (preferably morpholino), thiomorpholine (preferably thiomorpholino), piperazine (preferably piperazino), imidazoline and piperidine, 1,3-dioxolan-4-yl, 1,3-dioxan-4-yl, 1,3-
- 25 dioxan-5-yl and 1,4-dioxan-2-yl.

- Particular values for AR3 include, for example, bicyclic benzo-fused systems containing a 5- or 6-membered heteroaryl ring containing one nitrogen atom and optionally 1-3 further heteroatoms chosen from oxygen, sulfur and nitrogen. Specific examples of such ring systems include, for example, indole, benzofuran, benzothiophene, benzimidazole,
- 30 benzothiazole, benzisothiazole, benzoxazole, benzisoxazole, quinoline, quinoxaline, quinazoline, phthalazine and cinnoline.

Other particular examples of AR3 include 5/5-, 5/6 and 6/6 bicyclic ring systems containing heteroatoms in both of the rings. Specific examples of such ring systems include, for example, purine and naphthyridine.

Further particular examples of AR3 include bicyclic heteroaryl ring systems with at least one bridgehead nitrogen and optionally a further 1-3 heteroatoms chosen from oxygen, sulfur and nitrogen. Specific examples of such ring systems include, for example, 3H-pyrrolo[1,2-a]pyrrole, pyrrolo[2,1-b]thiazole, 1H-imidazo[1,2-a]pyrrole, 1H-imidazo[1,2-a]imidazole, 1H,3H-pyrrolo[1,2-c]oxazole, 1H-imidazo[1,5-a]pyrrole, pyrrolo[1,2-b]isoxazole, imidazo[5,1-b]thiazole, imidazo[2,1-b]thiazole, indolizine, imidazo[1,2-a]pyridine, imidazo[1,5-a]pyridine, pyrazolo[1,5-a]pyridine, pyrrolo[1,2-b]pyridazine, pyrrolo[1,2-c]pyrimidine, pyrrolo[1,2-a]pyrazine, pyrrolo[1,2-a]pyrimidine, pyrido[2,1-c]-s-triazole, s-triazole[1,5-a]pyridine, imidazo[1,2-c]pyrimidine, imidazo[1,2-a]pyrazine, imidazo[1,2-a]pyrimidine, imidazo[1,5-a]pyrazine, imidazo[1,5-a]pyrimidine, imidazo[1,2-b]-pyridazine, s-triazolo[4,3-a]pyrimidine, imidazo[5,1-b]oxazole and imidazo[2,1-b]oxazole. Other specific examples of such ring systems include, for example, [1H]-pyrrolo[2,1-c]oxazine, [3H]-oxazolo[3,4-a]pyridine, [6H]-pyrrolo[2,1-c]oxazine and pyrido[2,1-c][1,4]oxazine. Other specific examples of 5/5- bicyclic ring systems are imidazooxazole or imidazothiazole, in particular imidazo[5,1-b]thiazole, imidazo[2,1-b]thiazole, imidazo[5,1-b]oxazole or imidazo[2,1-b]oxazole.

Particular examples of AR3a and AR3b include, for example, indoline, 1,3,4,6,9,9a-hexahydropyrido[2,1c][1,4]oxazin-8-yl, 1,2,3,5,8,8a-hexahydroimidazo[1,5a]pyridin-7-yl, 1,5,8,8a-tetrahydrooxazolo[3,4a]pyridin-7-yl, 1,5,6,7,8,8a-hexahydrooxazolo[3,4a]pyridin-7-yl, (7aS)[3H,5H]-1,7a-dihydropyrrolo[1,2c]oxazol-6-yl, (7aS)[5H]-1,2,3,7a-tetrahydropyrrolo[1,2c]imidazol-6-yl, (7aR)[3H,5H]-1,7a-dihydropyrrolo[1,2c]oxazol-6-yl, [3H,5H]-pyrrolo[1,2-c]oxazol-6-yl, [5H]-2,3-dihydropyrrolo[1,2-c]imidazol-6-yl, [3H,5H]-pyrrolo[1,2-c]thiazol-6-yl, [3H,5H]-1,7a-dihydropyrrolo[1,2-c]thiazol-6-yl, [5H]-pyrrolo[1,2-c]imidazol-6-yl, [1H]-3,4,8,8a-tetrahydropyrrolo[2,1-c]oxazin-7-yl, [3H]-1,5,8,8a-tetrahydrooxazolo[3,4-a]pyrid-7-yl, [3H]-5,8-dihydrooxazolo[3,4-a]pyrid-7-yl and 5,8-dihydroimidazo[1,5-a]pyrid-7-yl.

Particular values for AR4 include, for example, pyrrolo[a]quinoline, 2,3-pyrroloisoquinoline, pyrrolo[a]isoquinoline, 1H-pyrrolo[1,2-a]benzimidazole,



9H-imidazo[1,2-a]indole, 5H-imidazo[2,1-a]isoindole, 1H-imidazo[3,4-a]indole, imidazo[1,2-a]quinoline, imidazo[2,1-a]isoquinoline, imidazo[1,5-a]quinoline and imidazo[5,1-a]isoquinoline.

The nomenclature used is that found in, for example, "Heterocyclic Compounds  
5 (Systems with bridgehead nitrogen), W.L.Mosby (Interscience Publishers Inc., New York), 1961, Parts 1 and 2.

Where optional substituents are listed such substitution is preferably not geminal disubstitution unless stated otherwise. If not stated elsewhere, suitable optional substituents for a particular group are those as stated for similar groups herein.

10        Preferable optional substituents on Ar<sub>2</sub>b as 1,3-dioxolan-4-yl, 1,3-dioxan-4-yl, 1,3-dioxan-5-yl or 1,4-dioxan-2-yl are mono- or disubstitution by substituents independently selected from (1-4C)alkyl (including geminal disubstitution), (1-4C)alkoxy, (1-4C)alkylthio, acetamido, (1-4C)alkanoyl, cyano, trifluoromethyl and phenyl].

15        Preferable optional substituents on CY1 & CY2 are mono- or disubstitution by substituents independently selected from (1-4C)alkyl (including geminal disubstitution), hydroxy, (1-4C)alkoxy, (1-4C)alkylthio, acetamido, (1-4C)alkanoyl, cyano, and trifluoromethyl.

Suitable pharmaceutically-acceptable salts include acid addition salts such as methanesulfonate, fumarate, hydrochloride, citrate, maleate, tartrate and (less preferably)  
20 hydrobromide. Also suitable are salts formed with phosphoric and sulfuric acid. In another aspect suitable salts are base salts such as an alkali metal salt for example sodium, an alkaline earth metal salt for example calcium or magnesium, an organic amine salt for example triethylamine, morpholine, N-methylpiperidine, N-ethylpiperidine, procaine, dibenzylamine, N,N-dibenzylethylamine, tris-(2-hydroxyethyl)amine, N-methyl d-glucamine and amino acids  
25 such as lysine. There may be more than one cation or anion depending on the number of charged functions and the valency of the cations or anions. A preferred pharmaceutically-acceptable salt is the sodium salt.

However, to facilitate isolation of the salt during preparation, salts which are less soluble in the chosen solvent may be preferred whether pharmaceutically-acceptable or not.

30        The compounds of the invention may be administered in the form of a pro-drug which is broken down in the human or animal body to give a compound of the invention. A prodrug may be used to alter or improve the physical and/or pharmacokinetic profile of the parent compound and can be formed when the parent compound contains a suitable group or

substituent which can be derivatised to form a prodrug. Examples of pro-drugs include in-vivo hydrolysable esters of a compound of the invention or a pharmaceutically-acceptable salt thereof.

Various forms of prodrugs are known in the art, for examples see:

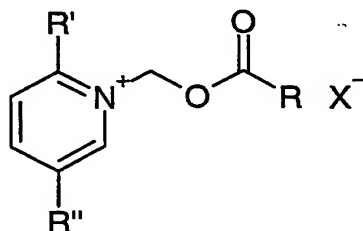
- 5 a) Design of Prodrugs, edited by H. Bundgaard, (Elsevier, 1985) and Methods in Enzymology, Vol. 42, p. 309-396, edited by K. Widder, *et al.* (Academic Press, 1985);
- b) A Textbook of Drug Design and Development, edited by Krogsgaard-Larsen and H. Bundgaard, Chapter 5 "Design and Application of Prodrugs", by H. Bundgaard p. 113-191 (1991);
- 10 c) H. Bundgaard, Advanced Drug Delivery Reviews, 8, 1-38 (1992);
- d) H. Bundgaard, *et al.*, Journal of Pharmaceutical Sciences, 77, 285 (1988); and
- e) N. Kakeya, *et al.*, Chem Pharm Bull, 32, 692 (1984).

An in-vivo hydrolysable ester of a compound of the invention or a pharmaceutically-acceptable salt thereof containing a carboxy or hydroxy group is, for example, a

- 15 pharmaceutically-acceptable ester which is hydrolysed in the human or animal body to produce the parent alcohol.

Suitable pharmaceutically-acceptable esters for carboxy include (1-6C)alkoxymethyl esters for example methoxymethyl, (1-6C)alkanoyloxymethyl esters for example pivaloyloxymethyl, phthalidyl esters, (3-8C)cycloalkoxycarbonyloxy(1-6C)alkyl esters for  
 20 example 1-cyclohexylcarbonyloxyethyl; 1,3-dioxolan-2-onylmethyl esters for example 5-methyl-1,3-dioxolan-2-ylmethyl; and (1-6C)alkoxycarbonyloxyethyl esters for example 1-methoxycarbonyloxyethyl and may be formed at any carboxy group in the compounds of this invention.

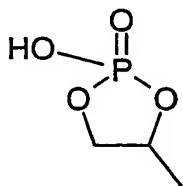
- 25 Suitable pro-drugs for pyridine derivatives include acyloxymethyl pyridinium salts eg halides; for example a pro-drug such as:



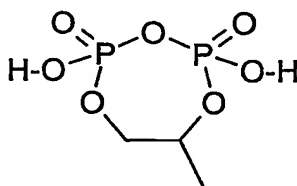
- 30 An in-vivo hydrolysable ester of a compound of the invention or a pharmaceutically-acceptable salt thereof containing a hydroxy group or groups includes inorganic esters such as

phosphate esters (including phosphoramidic cyclic esters) and  $\alpha$ -acyloxyalkyl ethers and related compounds which as a result of the in-vivo hydrolysis of the ester breakdown to give the parent hydroxy group/s. Examples of  $\alpha$ -acyloxyalkyl ethers include acetoxymethoxy and 2,2-dimethylpropionyloxymethoxy. A selection of in-vivo hydrolysable ester forming groups for hydroxy include (1-10C)alkanoyl, benzoyl, phenylacetyl and substituted benzoyl and phenylacetyl, (1-10C)alkoxycarbonyl (to give alkyl carbonate esters), di-(1-4C)alkylcarbamoyl and N-(di-(1-4C)alkylaminoethyl)-N-(1-4C)alkylcarbamoyl (to give carbamates), di-(1-4C)alkylaminoacetyl, carboxy(2-5C)alkylcarbonyl and carboxyacetyl. Examples of ring substituents on phenylacetyl and benzoyl include chloromethyl or aminomethyl, (1-4C)alkylaminomethyl and di-((1-4C)alkyl)aminomethyl, and morpholino or piperazino linked from a ring nitrogen atom via a methylene linking group to the 3- or 4-position of the benzoyl ring. Other interesting in-vivo hydrolysable esters include, for example,  $R^A C(O)O(1-6C)alkyl-CO-$  (wherein  $R^A$  is for example, optionally substituted benzyloxy-(1-4C)alkyl, or optionally substituted phenyl; suitable substituents on a phenyl group in such esters include, for example, 4-(1-4C)piperazino-(1-4C)alkyl, piperazino-(1-4C)alkyl and morpholino-(1-4C)alkyl.

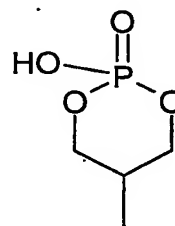
Suitable in-vivo hydrolysable esters of a compound of the formula (I) are described as follows. For example, a 1,2-diol may be cyclised to form a cyclic ester of formula (PD1) or a pyrophosphate of formula (PD2), and a 1,3-diol may be cyclised to form a cyclic ester of the formula (PD3):



(PD1)



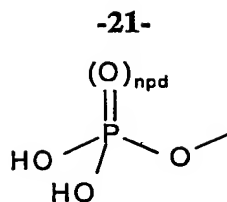
(PD2)



(PD3)

Esters of compounds of formula (I) wherein the HO- function/s in (PD1), (PD2) and (PD3) are protected by (1-4C)alkyl, phenyl or benzyl are useful intermediates for the preparation of such pro-drugs.

Further in-vivo hydrolysable esters include phosphoramidic esters, and also compounds of invention in which any free hydroxy group independently forms a phosphoryl (n<sub>pd</sub> is 1) or phosphiryl (n<sub>pd</sub> is 0) ester of the formula (PD4) :



(PD4)

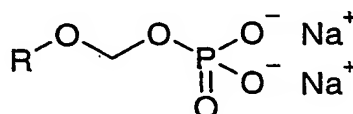
For the avoidance of doubt, phosphono is  $-\text{P}(\text{O})(\text{OH})_2$ ; (1-4C)alkoxy(hydroxy)-phosphoryl is a mono-(1-4C)alkoxy derivative of  $-\text{O}-\text{P}(\text{O})(\text{OH})_2$ ; and

5 di-(1-4C)alkoxyphosphoryl is a di-(1-4C)alkoxy derivative of  $-\text{O}-\text{P}(\text{O})(\text{OH})_2$ .

Useful intermediates for the preparation of such esters include compounds containing a group/s of formula (PD4) in which either or both of the  $-\text{OH}$  groups in (PD1) is independently protected by (1-4C)alkyl (such compounds also being interesting compounds in their own right), phenyl or phenyl-(1-4C)alkyl (such phenyl groups being optionally  
10 substituted by 1 or 2 groups independently selected from (1-4C)alkyl, nitro, halo and (1-4C)alkoxy).

Thus, prodrugs containing groups such as (PD1), (PD2), (PD3) and (PD4) may be prepared by reaction of a compound of invention containing suitable hydroxy group/s with a suitably protected phosphorylating agent (for example, containing a chloro or dialkylamino  
15 leaving group), followed by oxidation (if necessary) and deprotection.

Other suitable prodrugs include phosphonooxymethyl ethers and their salts, for example a prodrug of  $\text{R}-\text{OH}$  such as:



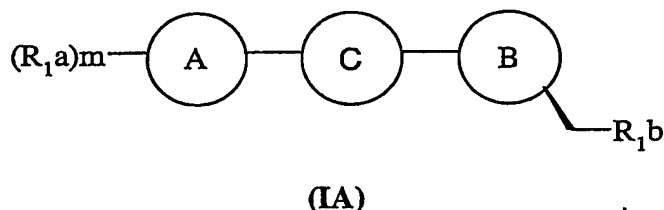
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When a compound of invention contains a number of free hydroxy group, those groups not being converted into a prodrug functionality may be protected (for example, using a *t*-butyl-dimethylsilyl group), and later deprotected. Also, enzymatic methods may be used to selectively phosphorylate or dephosphorylate alcohol functionalities.

25 Where pharmaceutically-acceptable salts of an in-vivo hydrolysable ester may be formed this is achieved by conventional techniques. Thus, for example, compounds containing a group of formula (PD1), (PD2), (PD3) and/or (PD4) may ionise (partially or fully) to form salts with an appropriate number of counter-ions. Thus, by way of example, if an in-vivo hydrolysable ester prodrug of a compound of invention contains two (PD4) groups,  
30 there are four  $\text{HO}-\text{P}-$  functionalities present in the overall molecule, each of which may form

an appropriate salt (i.e. the overall molecule may form, for example, a mono-, di-, tri- or tetra-sodium salt).

The compounds of the present invention have a chiral centre at the C-5 position of the oxazolidinone or isoxazoline ring B. Where  $m > 0$  there may be additional chiral centres at C-4 and/or C-5 position of Ring A. The pharmaceutically active diastereomers are of the formula (IA):



wherein the chiral centre of ring B is fixed in the orientation shown (generally the (5R) configuration, depending on the nature of  $R_1b$ , C and B) and ring B is acting as a pharmacophoric group; and wherein the substitution pattern and orientation of the chiral centre(s) at ring A may vary and may influence whether ring A also independently binds to a pharmacophore binding site.

Furthermore, some compounds of the invention may have other chiral centres. It is to be understood that the invention encompasses all such optical and diastereoisomers, and racemic mixtures, that possess antibacterial activity. It is well known in the art how to prepare optically-active forms (for example by resolution of the racemic form by recrystallisation techniques, by chiral synthesis, by enzymatic resolution, by biotransformation or by chromatographic separation) and how to determine antibacterial activity as described hereinafter.

The invention relates to all tautomeric forms of the compounds of the invention that possess antibacterial activity.

It is also to be understood that certain compounds of the invention can exist in solvated as well as unsolvated forms such as, for example, hydrated forms. It is to be understood that the invention encompasses all such solvated forms which possess antibacterial activity.

It is also to be understood that certain compounds of the invention may exhibit polymorphism, and that the invention encompasses all such forms which possess antibacterial activity.

As stated before, we have discovered a range of compounds that have good activity

against a broad range of Gram-positive pathogens including organisms known to be resistant to most commonly used antibiotics, together with activity against fastidious Gram negative pathogens such as *H.influenzae*, *M.catarrhalis*, *Mycoplasma* and *Chlamydia* strains. The following compounds possess preferred pharmaceutical and/or physical and/or

5 pharmacokinetic properties.

In one embodiment of the invention are provided compounds of formula (I), in an alternative embodiment are provided pharmaceutically-acceptable salts of compounds of formula (I), in a further alternative embodiment are provided in-vivo hydrolysable esters of compounds of formula (I), and in a further alternative embodiment are provided

10 pharmaceutically-acceptable salts of in-vivo hydrolysable esters of compounds of formula (I).

In one aspect, an in-vivo hydrolysable ester of a compound of the formula (I) is a phosphoryl ester (as defined by formula (PD4) with  $n$  as 1).

Compounds of the formula (I), or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein C is selected from any one of groups D to AD represent  
15 separate and independent aspects of the invention.

Particularly preferred compounds of the invention comprise a compound of the invention, or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein the substituents A, B,  $R_{1a}$ ,  $R_{1b}$ ,  $R_{2a}$ ,  $R_{2b}$ ,  $R_{3a}$ ,  $R_{2b'}$ ,  $R_{6b}$ ,  $R_{6b'}$ ,  $R_{2a'}$ ,  $R_{3a'}$ ,  $R_{5a'}$  and  $R_{6a'}$  and other substituents mentioned above have values disclosed hereinbefore, or any of the  
20 following values (which may be used where appropriate with any of the definitions and embodiments disclosed hereinbefore or hereinafter):

In one embodiment are provided compounds of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group D.

In another embodiment are provided compounds of formula (I) or a pharmaceutically-  
25 acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group E.

In another embodiment are provided compounds of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group F.

In another embodiment are provided compounds of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group G.

30 In another embodiment are provided compounds of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group H.

In another embodiment are provided compounds of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group I.

5

In another embodiment are provided compounds of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group N.

10

In another embodiment are provided compounds of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group P.

15

In another embodiment are provided compounds of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group S.

20

In another embodiment are provided compounds of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group U.

25

In another embodiment are provided compounds of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group X.

30

In another embodiment are provided compounds of formula (I) or a pharmaceutically-

In another embodiment are provided compounds of formula (I) or a pharmaceutically-

acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group Z.

In another embodiment are provided compounds of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group AA.

In another embodiment are provided compounds of formula (I) or a pharmaceutically-  
5 acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group AB.

In another embodiment are provided compounds of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group AC.

In another embodiment are provided compounds of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is group AD.

10 In another embodiment are provided compounds of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is a group selected from groups D, E, F, G, H, I, J, K and L as hereinbefore defined.

In another embodiment are provided compounds of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, in which group C is a group selected  
15 from groups M, N, O, P, Q, R, S, T and U as hereinbefore defined.

In another embodiment are provided compounds of formula (I or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof,) in which group C is a group selected from groups V, W, X, Y, Z, AA, AB, AC and AD as hereinbefore defined.

In another embodiment are provided compounds of formula (I or a pharmaceutically-  
20 acceptable salt or an in-vivo hydrolysable ester thereof,) in which group C is a group selected from groups F, H and I as hereinbefore defined. Preferably group C is group F or group I.

In one aspect both A and B are oxazolidinone rings.

In another aspect both A and B are isoxazoline rings.

In another aspect, either A or B is an oxazolidinone ring and the other is an  
25 isoxazoline ring. In this aspect, preferably A is the isoxazoline ring and B is the oxazolidinone ring.

In one aspect,  $R_{2b}$  and  $R_{6b}$  are independently H or F.

In one aspect  $R_{2b'}$  and  $R_{6b'}$  are both H.

When  $m = 1$ , in one aspect  $R_{1a}$  is selected from  $R_{1a1}$ ; in another aspect  $R_{1a}$  is selected  
30 from  $R_{1a2}$ ; in a further aspect  $R_{1a}$  is selected from  $R_{1a3}$  and in a further aspect  $R_{1a}$  is selected from  $R_{1a4}$ .

When  $m = 2$ , in one aspect both groups  $R_{1a}$  are independently selected from the same group  $R_{1a1}$  to  $R_{1a4}$ . In a further aspect when  $m = 2$ , each  $R_{1a}$  is independently selected from



different groups  $R_{1a1}$  to  $R_{1a4}$ .

Conveniently,  $m$  is 1 or 2. In one aspect, preferably  $m$  is 1. In another aspect, preferably  $m$  is 2.

In one aspect, when  $m$  is 2, both substituents  $R_{1a}$  are attached to position 4 of ring A to form a 5-7 membered spiro-ring.

In one aspect, when  $m$  is 2, both substituents  $R_{1a}$  are attached to position 5 of ring A to form a 5-7 membered spiro-ring.

In another aspect, when  $m$  is 2, one substituent  $R_{1a}$  is attached to position 4 of ring A, and the other is attached to position 5 of ring A, such that taken together with A they form a 5-7 membered fused-ring.

In a particular aspect when  $m$  is 2, the two substituents  $R_{1a}$  are identical to each other, preferably selected from  $R_{1a3}$  and are attached to the same position (4 or 5) of ring A such that ring A does not have a chiral centre.

Particular values for  $R_{1a}$  when selected from  $R_{1a1}$  are AR1 and AR2, more particularly AR2.

Particular values for  $R_{1a}$  when selected from  $R_{1a2}$  are cyano and  $-C(=W)NR_vR_w$  [wherein W is O or S,  $R_v$  and  $R_w$  are independently H, or (1-4C)alkyl and wherein  $R_v$  and  $R_w$  taken together with the amide or thioamide nitrogen to which they are attached can form a 5-7 membered ring optionally with an additional heteroatom selected from N, O,  $S(O)_n$  in place of 1 carbon atom of the so formed ring; wherein when said ring is a piperazine ring, the ring may be optionally substituted on the additional nitrogen by a group selected from (1-4C)alkyl (optionally substituted on a carbon not adjacent to the nitrogen), (1-4C)cycloalkyl, (1-4C)acyl,  $-COO(1-4C)alkyl$ ,  $S(O)_n(1-4C)alkyl$  (wherein  $n = 1$  or  $2$ );  $-COOAR_1$ ,  $-CS(1-4C)alkyl$  and  $-C(=S)O(1-4C)alkyl$ ; wherein any (1-4C)alkyl, (1-4C)acyl and (1-4C)cycloalkyl is optionally substituted by cyano, hydroxy or halo]. More particular values for  $R_{1a}$  when selected from  $R_{1a2}$  are cyano, formyl,  $-COO(1-4C)alkyl$ ,  $-C(=O)NH_2$ ,  $-(C=O)piperazine$  and  $-(C=O)morpholine$ .

Particular values for  $R_{1a}$  when selected from  $R_{1a3}$  are (1-10C)alkyl {optionally substituted by one or more groups (including geminal disubstitution) each independently selected from hydroxy, (1-10C)alkoxy, (1-4C)alkoxy-(1-4C)alkoxy, (1-4C)alkoxy-(1-4C)alkoxy-(1-4C)alkoxy, (1-4C)alkylcarbonyl, phosphoryl [ $-O-P(O)(OH)_2$ , and mono- and di-(1-4C)alkoxy derivatives thereof], phosphiryl [ $-O-P(OH)_2$  and mono- and di-(1-4C)alkoxy

- derivatives thereof], and amino; and/or optionally substituted by one group selected from carboxy, cyano, halo, trifluoromethyl, (1-4C)alkoxycarbonyl, (1-4C)alkoxy- (1-4C)alkoxycarbonyl, (1-4C)alkoxy-(1-4C)alkoxy-(1-4C)alkoxycarbonyl, (1-4C)alkylamino, di((1-4C)alkyl)amino, (1-6C)alkanoylamino-, (1-4C)alkoxycarbonylamino-, N-(1-4C)alkyl-  
 5 N-(1-6C)alkanoylamino-,  $-C(=W)NR_vR_w$  [wherein W is O,  $R_v$  and  $R_w$  are independently H, or (1-4C)alkyl and wherein  $R_v$  and  $R_w$  taken together with the amide nitrogen to which they are attached can form a morpholine, pyrrolidine, piperidine or piperazine ring; wherein when said ring is a piperazine ring, the ring may be optionally substituted on the additional nitrogen by a group selected from (1-4C)alkyl and (1-4C)acyl], (1-4C)alkylS(O)<sub>q</sub>-, (q is 0, 1 or 2),  
 10 AR<sub>2</sub>, AR<sub>2</sub>-O-, AR<sub>2</sub>-NH-, and also AR<sub>2a</sub>, AR<sub>2b</sub> versions of AR<sub>2</sub> containing groups}; wherein any (1-4C)alkyl and (1-4C)acyl present in any substituent on R<sub>1a3</sub> may itself be substituted by one or two groups independently selected from cyano, hydroxy, halo, amino, (1-4C)alkylamino and di(1-4C)alkylamino, provided that such a substituent is not on a carbon adjacent to a heteroatom atom if present;  
 15 More particular values for R<sub>1a</sub> when selected from R<sub>1a3</sub> are (1-10C)alkyl {optionally substituted by one or more groups (including geminal disubstitution) each independently selected from hydroxy, (1-10C)alkoxy, (1-4C)alkoxy-(1-4C)alkoxy, (1-4C)alkoxy-(1-4C)alkoxy-(1-4C)alkoxy, phosphoryl [-O-P(O)(OH)<sub>2</sub>], and mono- and di-(1-4C)alkoxy derivatives thereof], phosphiryl [-O-P(OH)<sub>2</sub> and mono- and di-(1-4C)alkoxy derivatives  
 20 thereof], carboxy, amino, (1-4C)alkylamino, di(1-4C)alkylamino, (1-4C)alkylS(O)<sub>q</sub> (preferably where q=2), AR<sub>2</sub> and AR<sub>2b</sub>. More particular values for R<sub>1a</sub> when selected from R<sub>1a3</sub> are (1-6C)alkyl substituted as hereinbefore described. Even more particular values for R<sub>1a</sub> when selected from R<sub>1a3</sub> are (1-4C)alkyl substituted as hereinbefore described.

Particular values for R<sub>1a</sub> when selected from R<sub>1a4</sub> are R<sub>14</sub>C(O)O(1-6C)alkyl- wherein  
 25 R<sub>14</sub> is selected from AR<sub>1</sub>, AR<sub>2</sub>, AR<sub>2a</sub>, AR<sub>2b</sub> and (1-10C)alkyl (optionally substituted by one or more substituents independently selected from OH and di(1-4C)alkylamino. More particular values for R<sub>14</sub> are AR<sub>2a</sub>, AR<sub>2b</sub> and (1-6C)alkyl substituted with hydroxy. More particular values for R<sub>14</sub> are AR<sub>2a</sub>, AR<sub>2b</sub> and (1-4C)alkyl substituted with hydroxy.

Particular values for R<sub>1a</sub> when selected from R<sub>1a5</sub> are fluoro, chloro and hydroxy.  
 30 In all of the embodiments, aspects and preferable values for R<sub>1b</sub> defined hereinbefore or hereinafter, any (1-4C)alkyl group may be optionally substituted as hereinbefore defined. Particular substituents for (1-4C)alkyl groups in definitions for R<sub>1b</sub> are one or two halogen groups, particularly geminal disubstitution (provided that such substitution is not on a carbon

atom attached to an oxygen) and cyano. Examples of di-halosubstituted groups are  $-\text{NHCOCF}_2\text{H}$  and  $-\text{NHCSCCl}_2\text{H}$ .

When  $\text{R}_{1b}$  is  $-\text{N}(\text{R}_5)\text{HET-1}$ ,  $\text{R}_5$  is preferably hydrogen.

In one embodiment  $\text{R}_{1b}$  is selected from hydroxy,  $-\text{NHCO}(1-4\text{C})\text{alkyl}$ ,  
 5  $-\text{NHCO}(1-4\text{C})\text{cycloalkyl}$ ,  $-\text{NHCS}(1-4\text{C})\text{alkyl}$ ,  $-\text{NHCOO}(1-4\text{C})\text{alkyl}$ ,  
 $-\text{NH}(\text{C}=\text{S})\text{O}(1-4\text{C})\text{alkyl}$ ,  $-\text{OCO}(1-4\text{C})\text{alkyl}$ ,  $-\text{N}(\text{R}_5)\text{-HET-1}$  and  $\text{HET-2}$ .

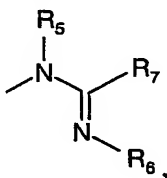
In another embodiment  $\text{R}_{1b}$  is selected from  $-\text{NHCO}(1-4\text{C})\text{alkyl}$ ,  
 $-\text{NHCO}(1-4\text{C})\text{cycloalkyl}$ ,  $-\text{NHCS}(1-4\text{C})\text{alkyl}$ ,  $-\text{N}(\text{R}_5)\text{-HET-1}$  and  $\text{HET-2}$ .

More preferably  $\text{R}_{1b}$  is selected from  $-\text{NHCO}(1-4\text{C})\text{alkyl}$ ,  $-\text{NHCS}(1-4\text{C})\text{alkyl}$ ,  
 10  $-\text{N}(\text{R}_5)\text{-HET-1}$  and  $\text{HET-2}$ .

In one aspect,  $\text{R}_{1b}$  is selected from  $\text{OH}$ ,  $-\text{NR}_5\text{C}(=\text{W})\text{R}_4$  and  $-\text{OC}(=\text{O})\text{R}_4$ , in particular  $\text{OH}$ ,  $-\text{NHCOMe}$  and  $-\text{NHCOOMe}$ .

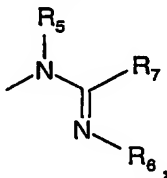
In a further aspect,  $\text{R}_{1b}$  is selected from  $-\text{N}(\text{R}_5)\text{-HET-1}$  and  $\text{HET-2}$ , in particular  
 $\text{HET-1}$  as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and  $\text{HET-2}$  as 1,2,3-triazol-1-yl  
 15 (optionally substituted) or tetrazol-2-yl.

In one embodiment  $\text{R}_{1b}$  is selected from hydroxy,  $-\text{NHC}(=\text{W})\text{R}_4$ ,  $-\text{OC}(=\text{O})\text{R}_4$ , and



wherein  $\text{W}$ ,  $\text{R}_5$  and  $\text{R}_6$  are as defined hereinbefore,  $\text{R}_4$  is selected from hydrogen, amino, (1-4C)alkyl,  $-\text{NH}(1-4\text{C})\text{alkyl}$ ,  $-\text{N}(\text{di-}(1-4\text{C})\text{alkyl})$ ,  $-\text{O}(1-4\text{C})\text{alkyl}$ ,  $-\text{S}(1-4\text{C})\text{alkyl}$ ,  
 20  $(2-4\text{C})\text{alkenyl}$ ,  $-(\text{CH}_2)_p(3-6\text{C})\text{cycloalkyl}$  and  $-(\text{CH}_2)_p(3-6\text{C})\text{cycloalkenyl}$  wherein  $p$  is 0, 1 or 2; and  $\text{R}_7$  is selected from hydrogen, (1-8C)alkyl,  $-\text{OR}_{12}$ ,  $-\text{SR}_{12}$ , amino,  $-\text{NHR}_{12}$ ,  $-\text{N}(\text{R}_{12})(\text{R}_{13})$ , (1-8C)alkylaryl and mono-, di-, tri- and per-halo(1-8C)alkyl.

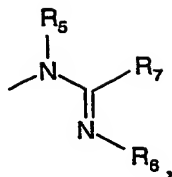
In another embodiment,  $\text{R}_{1b}$  is selected from hydroxy,  $-\text{NHC}(=\text{W})\text{R}_4$ ,  $-\text{OC}(=\text{O})\text{R}_4$ ,



and

25 wherein  $\text{W}$ ,  $\text{R}_4$ ,  $\text{R}_5$ ,  $\text{R}_6$  and  $\text{R}_7$  are as defined hereinbefore, especially wherein  $\text{R}_4$  is (1-4C)alkyl, (1-4C)alkoxy, cycloalkyl (particularly cyclopropyl) or haloalkyl (particularly dichloromethyl).

In another embodiment,  $\text{R}_{1b}$  is selected from hydroxy,  $-\text{NHC}(=\text{W})\text{R}_4$ ,  $-\text{OC}(=\text{O})\text{R}_4$ ,



and

wherein W, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub> and R<sub>7</sub> are as defined hereinbefore, especially wherein R<sub>4</sub> is (1-4C)alkyl or (1-4C)alkoxy.

Particular values for R<sub>5</sub> (which may be used as appropriate with any of the definitions and embodiments disclosed hereinbefore or hereinafter) are hydrogen, tert-butoxycarbonyl and benzyloxycarbonyl. More particularly, R<sub>5</sub> is hydrogen.

In one aspect R<sub>12</sub> and R<sub>13</sub> are independently selected from hydrogen, alkyl and aryl, or for any N(R<sub>12</sub>)(R<sub>13</sub>) group, R<sub>12</sub> and R<sub>13</sub> may additionally be taken together with the nitrogen atom to which they are attached to form pyrrolidinyl, piperidinyl or morpholinyl group, optionally substituted as hereinbefore described. In one aspect R<sub>15</sub> and R<sub>16</sub> are independently selected from hydrogen, phenyl and (1-4C)alkyl).

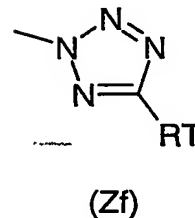
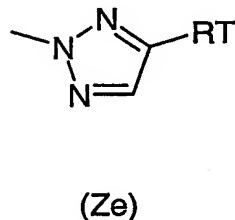
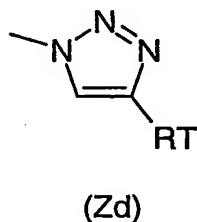
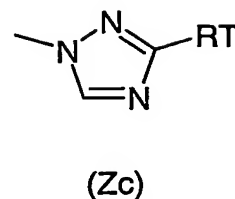
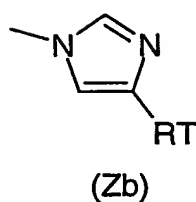
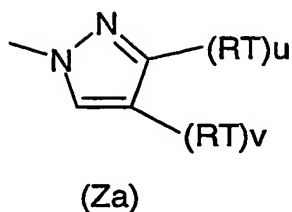
In one embodiment HET-1 and HET-2 are unsubstituted. When substituted, preferred substituents are selected from halo (particularly chloro), (1-4C)alkyl, especially methyl, mono- and di-halo methyl (wherein halo is preferably fluoro, chloro or bromo), trifluoromethyl and cyanomethyl.

Preferred are HET-1 and HET-2 as 5-membered rings, ie HET-1 as HET-1A and HET-2 as HET-2A, in particular HET-1A as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2A as 1,2,3-triazol-1-yl or tetrazol-2-yl.

In one aspect, HET-2A as 1,2,3-triazol-1-yl is substituted, preferably by halo (particularly chloro), methyl, difluoromethyl, fluoromethyl, chloromethyl, cyanomethyl or trifluoromethyl.

In one embodiment HET-2A is selected from the structures (Za) to (Zf) below:

-30-



wherein u and v are independently 0 or 1 and RT is as defined in any of the embodiments or aspects defined hereinbefore or hereinafter.

- 5 In one embodiment HET-2A is selected from 1,2,3-triazole (especially 1,2,3-triazol-1-yl (Zd)), 1,2,4-triazole (especially 1,2,4-triazol-1-yl (Zc)) and tetrazole (preferably tetrazol-2-yl (Zf)) and wherein u and v are independently 0 or 1 and RT is as defined in any of the embodiments or aspects defined hereinbefore or hereinafter.

In another embodiment HET-2A is selected from 1,2,3-triazol-1-yl (Zd) and tetrazol-2-yl (Zf) and wherein u and v are independently 0 or 1 and RT is as defined in any of the  
10 embodiments or aspects defined hereinbefore or hereinafter.

In another embodiment HET-2A is 1,2,3-triazol-1-yl (Zd) and wherein u and v are independently 0 or 1 and RT is as defined in any of the embodiments or aspects defined hereinbefore or hereinafter.

- 15 In one embodiment HET-2B is a di-hydro version of pyrimidine, pyridazine, pyrazine, 1,2,3-triazine, 1,2,4-triazine, 1,3,5-triazine and pyridine and wherein RT is as defined in any of the embodiments or aspects defined hereinbefore or hereinafter.

In another embodiment HET-2B is selected from pyrimidone, pyridazinone, pyrazinone, 1,2,3-triazinone, 1,2,4-triazinone, 1,3,5-triazinone and pyridone and wherein RT  
20 is as defined in any of the embodiments or aspects defined hereinbefore or hereinafter.

In another embodiment HET-2B is selected from thiopyrimidone, thiopyridazinone, thiopyrazinone, thio-1,2,3-triazinone, thio-1,2,4-triazinone, thio-1,3,5-triazinone and thiopyridone and wherein RT is as defined in any of the embodiments or aspects defined hereinbefore or hereinafter.

In one aspect RT is preferably selected from a substituent from the group  
(RTa1) hydrogen, halogen, (1-4C)alkoxy, (2-4C)alkenyloxy, (2-4C)alkenyl,  
(2-4C)alkynyl, (3-6C)cycloalkyl, (3-6C)cycloalkenyl, (1-4C)alkylthio, amino, azido, cyano  
and nitro; or,

- 5 (RTa2) (1-4C)alkylamino, di-(1-4C)alkylamino and (2-4C)alkenylamino;  
(RTb1) a (1-4C)alkyl group which is optionally substituted by one substituent selected  
from hydroxy, (1-4C)alkoxy, (1-4C)alkylthio, cyano and azido; or  
(RTb2) a (1-4C)alkyl group which is optionally substituted by one substituent selected  
from (2-4C)alkenyloxy, (3-6C)cycloalkyl and (3-6C)cycloalkenyl;  
10 and wherein at each occurrence of an RT substituent containing an alkyl, alkenyl, alkynyl,  
cycloalkyl or cycloalkenyl moiety in (RTa1) or (RTa2), or (RTb1) or (RTb2) each such  
moiety is optionally substituted on an available carbon atom with one, two, three or more  
substituents independently selected from F, Cl, Br, OH and CN.

In another aspect RT is preferably selected from a substituent from the group:

- 15 (RTa1) hydrogen, halogen, (1-4C)alkoxy, (2-4C)alkenyloxy, (2-4C)alkenyl,  
(2-4C)alkynyl, (3-6C)cycloalkyl, (3-6C)cycloalkenyl, (1-4C)alkylthio, amino, azido, cyano,  
and nitro; or  
(RTb1) a (1-4C)alkyl group which is optionally substituted by one substituent selected  
from hydroxy, (1-4C)alkoxy, (1-4C)alkylthio, cyano and azido;  
20 and wherein at each occurrence of an RT substituent containing an alkyl, alkenyl, alkynyl,  
cycloalkyl or cycloalkenyl moiety in (RTa1) or (RTb1) each such moiety is optionally  
substituted on an available carbon atom with one, two, three or more substituents  
independently selected from F, Cl, Br, and CN.

In a further aspect RT is most preferably

- 25 (a) hydrogen; or  
(b) halogen, in particular fluorine, chlorine, or bromine; or  
(c) cyano; or  
(d) (1-4C)alkyl, in particular methyl; or  
(e) monosubstituted (1-4C)alkyl, in particular fluoromethyl, chloromethyl, bromomethyl,  
30 cyanomethyl, azidomethyl, hydroxymethyl; or  
(f) disubstituted (1-4C)alkyl, for example difluoromethyl, or  
trisubstituted (1-4C)alkyl, for example trifluoromethyl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-

acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

- 5 In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as  
10 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe,  
15 -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and  
20 HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an  
25 oxazolidinone and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an  
30 oxazolidinone and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-

acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

- 5 In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as  
10 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe,  
15 -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and  
20 HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an  
25 oxazolidinone and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an  
30 oxazolidinone and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-



acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a3</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

- 5 In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a3</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as  
10 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a3</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe,

- 15 -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a3</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and  
20 HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an  
25 oxazolidinone and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a3</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an  
30 oxazolidinone and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a3</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-

acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 2; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

- 5 In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 2; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl
- 10 (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 2; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl,

- 15 -NH(C=S)OMe and -NHCOOMe.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 2; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1
- 20 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an
- 25 oxazolidinone and the other is an isoxazoline; m = 2; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups D, E, F, G, H, I, J, K and L; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an
- 30 oxazolidinone and the other is an isoxazoline; m = 2; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-

acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

- 5 In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as  
10 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe,  
15 -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and  
20 HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is  
25 an oxazolidinone and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

- In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is  
30 an oxazolidinone and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both oxazolidinones;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a2}$ ; and  $R_{1b}$  is selected from OH, -NHCOMe,  
 5 -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both oxazolidinones;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a2}$ ; and  $R_{1b}$  is selected from -N( $R_5$ )-HET-1 and  
 10 HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both  
 15 isoxazolines;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a2}$ ; and  $R_{1b}$  is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both  
 20 isoxazolines;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a2}$ ; and  $R_{1b}$  is selected from -N( $R_5$ )-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
 25 groups M, N, O, P, Q, R, S, T and U;  $R_{2b}$  and  $R_{6b}$  are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a2}$ ; and  $R_{1b}$  is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
 30 groups M, N, O, P, Q, R, S, T and U;  $R_{2b}$  and  $R_{6b}$  are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a2}$ ; and  $R_{1b}$  is selected from -N( $R_5$ )-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both oxazolidinones;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a3}$ ; and  $R_{1b}$  is selected from OH, -NHCOMe, 5 -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both oxazolidinones;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a3}$ ; and  $R_{1b}$  is selected from -N( $R_5$ )-HET-1 and 10 HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both 15 isoxazolines;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a3}$ ; and  $R_{1b}$  is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both 20 isoxazolines;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a3}$ ; and  $R_{1b}$  is selected from -N( $R_5$ )-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from 25 groups M, N, O, P, Q, R, S, T and U;  $R_{2b}$  and  $R_{6b}$  are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a3}$ ; and  $R_{1b}$  is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from 30 groups M, N, O, P, Q, R, S, T and U;  $R_{2b}$  and  $R_{6b}$  are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a3}$ ; and  $R_{1b}$  is selected from -N( $R_5$ )-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or

tetrazol-2-yl:

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both  
5 oxazolidinones; m = 2; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups M, N, O, P, Q, R, S, T and U; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both  
10 oxazolidinones; m = 2; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
15 groups M, N, O, P, Q, R, S, T and U; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 2; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
20 groups M, N, O, P, Q, R, S, T and U; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 2; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
25 groups M, N, O, P, Q, R, S, T and U; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline; m = 2; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
30 groups M, N, O, P, Q, R, S, T and U; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline; m = 2; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or

isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B  
5 are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B  
10 are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
15 groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
20 groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
25 groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
30 groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-

thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
5 groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
10 groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
15 groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
20 groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
25 groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from  
30 groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and



R<sub>1</sub>b is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2</sub>b and R<sub>6</sub>b are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1</sub>a is selected from R<sub>1</sub>a3; and R<sub>1</sub>b is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2</sub>b and R<sub>6</sub>b are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1</sub>a is selected from R<sub>1</sub>a3; and R<sub>1</sub>b is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2</sub>b and R<sub>6</sub>b are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1</sub>a is selected from R<sub>1</sub>a3; and R<sub>1</sub>b is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2</sub>b and R<sub>6</sub>b are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1</sub>a is selected from R<sub>1</sub>a3; and R<sub>1</sub>b is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2</sub>b and R<sub>6</sub>b are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline; m = 1; R<sub>1</sub>a is selected from R<sub>1</sub>a3; and R<sub>1</sub>b is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2</sub>b and R<sub>6</sub>b are independently H or F; either A

or B is an oxazolidinone and the other is an isoxazoline;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a3}$ ; and  $R_{1b}$  is selected from  $-N(R_5)$ -HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

5 In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups V, W, X, Y, Z, AA, AB, AC and AD;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both oxazolidinones;  $m = 2$ ; and  $R_{1b}$  is selected from OH,  $-NHCOMe$ ,  $-NHCOcyclopropyl$ ,  $-NH(C=S)OMe$  and  $-NHCOOMe$ .

10 In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups V, W, X, Y, Z, AA, AB, AC and AD;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both oxazolidinones;  $m = 2$ ; and  $R_{1b}$  is selected from  $-N(R_5)$ -HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-  
15 1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof,) wherein group C is selected from groups V, W, X, Y, Z, AA, AB, AC and AD;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both isoxazolines;  $m = 2$ ; and  $R_{1b}$  is selected from OH,  $-NHCOMe$ ,  $-NHCOcyclopropyl$ ,  
20  $-NH(C=S)OMe$  and  $-NHCOOMe$ .

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups V, W, X, Y, Z, AA, AB, AC and AD;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both isoxazolines;  $m = 2$ ; and  $R_{1b}$  is selected from  $-N(R_5)$ -HET-1 and HET-2, in  
25 particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups V, W, X, Y, Z, AA, AB, AC and AD;  $R_{2b}$  and  $R_{6b}$  are independently H or F; either A  
30 or B is an oxazolidinone and the other is an isoxazoline;  $m = 2$ ; and  $R_{1b}$  is selected from OH,  $-NHCOMe$ ,  $-NHCOcyclopropyl$ ,  $-NH(C=S)OMe$  and  $-NHCOOMe$ .

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from

groups V, W, X, Y, Z, AA, AB, AC and AD; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline; m = 2; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

5 In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

10 In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-  
15 1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl,  
20 -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in  
25 particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an oxazolidinone  
30 and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from

groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a1</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

5 In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

10 In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-  
15 1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe,  
20 -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in  
25 particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an oxazolidinone  
30 and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a2</sub>; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from

groups F, H and I;  $R_{2b}$  and  $R_{6b}$  are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a2}$ ; and  $R_{1b}$  is selected from  $-N(R_5)$ -HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

5 In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both oxazolidinones;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a3}$ ; and  $R_{1b}$  is selected from OH,  $-NHCOMe$ ,  $-NHCOcyclopropyl$ ,  $-NH(C=S)OMe$  and  $-NHCOOMe$ .

10 In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both oxazolidinones;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a3}$ ; and  $R_{1b}$  is selected from  $-N(R_5)$ -HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-  
15 1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both isoxazolines;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a3}$ ; and  $R_{1b}$  is selected from OH,  $-NHCOMe$ ,  
20  $-NHCOcyclopropyl$ ,  $-NH(C=S)OMe$  and  $-NHCOOMe$ .

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I;  $R_{2b}$  and  $R_{6b}$  are independently H or F; A and B are both isoxazolines;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a3}$ ; and  $R_{1b}$  is selected from  $-N(R_5)$ -HET-1 and HET-2, in particular  
25 HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I;  $R_{2b}$  and  $R_{6b}$  are independently H or F; either A or B is an oxazolidinone  
30 and the other is an isoxazoline;  $m = 1$ ;  $R_{1a}$  is selected from  $R_{1a3}$ ; and  $R_{1b}$  is selected from OH,  $-NHCOMe$ ,  $-NHCOcyclopropyl$ ,  $-NH(C=S)OMe$  and  $-NHCOOMe$ .

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from

groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline; m = 1; R<sub>1a</sub> is selected from R<sub>1a3</sub>; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

5 In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 2; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

10 In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both oxazolidinones; m = 2; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or  
15 tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 2; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and  
20 -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; A and B are both isoxazolines; m = 2; and R<sub>1b</sub> is selected from -N(R<sub>5</sub>)-HET-1 and HET-2, in particular HET-1 as isoxazolyl,  
25 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from groups F, H and I; R<sub>2b</sub> and R<sub>6b</sub> are independently H or F; either A or B is an oxazolidinone  
30 and the other is an isoxazoline; m = 2; and R<sub>1b</sub> is selected from OH, -NHCOMe, -NHCOcyclopropyl, -NH(C=S)OMe and -NHCOOMe.

In one embodiment is provided a compound of formula (I) or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, wherein group C is selected from

groups F, H and I;  $R_{2b}$  and  $R_{6b}$  are independently H or F; either A or B is an oxazolidinone and the other is an isoxazoline;  $m = 2$ ; and  $R_{1b}$  is selected from  $-N(R_5)$ -HET-1 and HET-2, in particular HET-1 as isoxazolyl, 1,2,5-thiadiazolyl or isothiazolyl and HET-2 as 1,2,3-triazol-1-yl (optionally substituted) or tetrazol-2-yl.

5 In all of the above definitions the preferred compounds are as shown in formula (IA).

Particular compounds of the present invention include each individual compound described in the Examples, especially Example 1.

Process section:

10 In a further aspect the present invention provides a process for preparing a compound of invention or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof. It will be appreciated that during certain of the following processes certain substituents may require protection to prevent their undesired reaction. The skilled chemist will appreciate when such protection is required, and how such protecting groups may be put in place, and  
15 later removed.

For examples of protecting groups see one of the many general texts on the subject, for example, 'Protective Groups in Organic Synthesis' by Theodora Green (publisher: John Wiley & Sons). Protecting groups may be removed by any convenient method as described in the literature or known to the skilled chemist as appropriate for the removal of the protecting  
20 group in question, such methods being chosen so as to effect removal of the protecting group with minimum disturbance of groups elsewhere in the molecule.

Thus, if reactants include, for example, groups such as amino, carboxy or hydroxy it may be desirable to protect the group in some of the reactions mentioned herein.

A suitable protecting group for an amino or alkylamino group is, for example, an acyl  
25 group, for example an alkanoyl group such as acetyl, an alkoxycarbonyl group, for example a methoxycarbonyl, ethoxycarbonyl or *t*-butoxycarbonyl group, an arylmethoxycarbonyl group, for example benzyloxycarbonyl, or an aroyl group, for example benzoyl. The deprotection conditions for the above protecting groups necessarily vary with the choice of protecting group. Thus, for example, an acyl group such as an alkanoyl or alkoxycarbonyl group or an  
30 aroyl group may be removed for example, by hydrolysis with a suitable base such as an alkali metal hydroxide, for example lithium or sodium hydroxide. Alternatively an acyl group such as a *t*-butoxycarbonyl group may be removed, for example, by treatment with a suitable acid as hydrochloric, sulfuric or phosphoric acid or trifluoroacetic acid and an

arylmethoxycarbonyl group such as a benzyloxycarbonyl group may be removed, for example, by hydrogenation over a catalyst such as palladium-on-carbon, or by treatment with a Lewis acid for example boron tris(trifluoroacetate). A suitable alternative protecting group for a primary amino group is, for example, a phthaloyl group which may be removed by  
5 treatment with an alkylamine, for example dimethylaminopropylamine, or with hydrazine.

A suitable protecting group for a hydroxy group is, for example, an acyl group, for example an alkanoyl group such as acetyl, an aroyl group, for example benzoyl, or an arylmethyl group, for example benzyl. The deprotection conditions for the above protecting groups will necessarily vary with the choice of protecting group. Thus, for example, an acyl  
10 group such as an alkanoyl or an aroyl group may be removed, for example, by hydrolysis with a suitable base such as an alkali metal hydroxide, for example lithium or sodium hydroxide. Alternatively an arylmethyl group such as a benzyl group may be removed, for example, by hydrogenation over a catalyst such as palladium-on-carbon.

A suitable protecting group for a carboxy group is, for example, an esterifying group,  
15 for example a methyl or an ethyl group which may be removed, for example, by hydrolysis with a base such as sodium hydroxide, or for example a *t*-butyl group which may be removed, for example, by treatment with an acid, for example an organic acid such as trifluoroacetic acid, or for example a benzyl group which may be removed, for example, by hydrogenation over a catalyst such as palladium-on-carbon. Resins may also be used as a protecting group.

20 The protecting groups may be removed at any convenient stage in the synthesis using conventional techniques well known in the chemical art.

A compound of the invention, or a pharmaceutically-acceptable salt or an *in vivo* hydrolysable ester thereof, may be prepared by any process known to be applicable to the preparation of chemically-related compounds. Such processes, when used to prepare a  
25 compound of the invention, or a pharmaceutically-acceptable salt or an *in vivo* hydrolysable ester thereof, are provided as a further feature of the invention and are illustrated by the following representative examples. Necessary starting materials may be obtained by standard procedures of organic chemistry (see, for example, Advanced Organic Chemistry (Wiley-Interscience), Jerry March or Houben-Weyl, Methoden der Organischen Chemie). The  
30 preparation of such starting materials is described within the accompanying non-limiting Examples. Alternatively, necessary starting materials are obtainable by analogous procedures to those illustrated which are within the ordinary skill of an organic chemist. Information on the preparation of necessary starting materials or related compounds (which may be adapted



to form necessary starting materials) may also be found in the certain Patent Application Publications, the contents of the relevant process sections of which are hereby incorporated herein by reference; for example WO 94/13649; WO 98/54161; WO 99/64416; WO 99/64417; WO 00/21960; WO 01/40222.

- 5 In particular we refer to our PCT patent applications WO 99/64417 and WO 00/21960 wherein detailed guidance is given on convenient methods for preparing oxazolidinone compounds.

The skilled organic chemist will be able to use and adapt the information contained and referenced within the above references, and accompanying Examples therein and also the  
10 Examples herein, to obtain necessary starting materials, and products. For example, the skilled chemist will be able to apply the teaching herein for compounds of formula (I) in which group C is drawn from groups D to L to prepare compounds in which group C is drawn from groups M to U and groups V to AD as hereinbefore defined. Similarly, in the processes illustrated below the skilled chemist will be able to apply the relevant teaching as necessary to  
15 prepare compounds in which one or both of rings A or B is isoxazoline to prepare those compounds in which one or both rings A or B is oxazolidinone; and the skilled chemist will be able to apply the relevant teaching as necessary to prepare compounds in which one or both of rings A or B is oxazolidinone to prepare those compounds in which one or both rings A or B is isoxazoline.

- 20 Thus, the present invention also provides that the compounds of the invention and pharmaceutically-acceptable salts and *in vivo* hydrolysable esters thereof, can be prepared by a process (a) to (h) as follows (wherein the variables are as defined above unless otherwise stated):

(a) by modifying a substituent in, or introducing a substituent into another compound of  
25 the invention by using standard chemistry (see for example, Comprehensive Organic Functional Group Transformations (Pergamon), Katritzky, Meth-Cohn & Rees or Advanced Organic Chemistry (Wiley-Interscience), Jerry March or Houben-Weyl, Methoden der Organischen Chemie)); for example:

an acylamino group may be converted into a thioacylamino group;

- 30 an acylamino group or thioacylamino group may be converted into another acylamino or thioacylamino; heterocyclyl for instance tetrazolyl or thiazolyl, or heterocyclylamino group (optionally substituted or protected on the amino-nitrogen atom), a heterocyclyl group linked through nitrogen (optionally substituted on a carbon other than a carbon adjacent to the

- linking nitrogen atom), for instance an optionally 4-substituted 1,2,3-triazol-1-yl group; or an amidino group; such conversions of the acylamino group taking place either directly or through through the intermediacy of one or more derivatives such as an amino group; an acyloxy group may be converted into a hydroxy group or into the groups that may be
- 5 obtained from a hydroxy group (either directly or through the intermediacy of a hydroxy group);
- an alkyl halide such as alkylbromide or alkyl iodide may be converted into an alkyl fluoride or nitrile;
- an alkyl sulfonate such as alkyl methanesulfonate may be converted into an alkyl fluoride or
- 10 nitrile;
- an alkylthio group such as methylthio may be converted into a methanesulfinyl or methanesulfonyl group;
- an arylthio group such as phenylthio may be converted into a benzenesulfinyl or benzenesulfonyl group;
- 15 an amidino or guanidino group may be converted into a range of 2-substituted 1,3-diazoles and 1,3-diazines;
- an amino group may be converted for instance into acylamino or thioacylamino for instance an acetamide (optionally substituted), alkyl- or dialkyl-amino and thence into a further range of N-alkyl-amine derivatives, sulfonylamino, sulfinylamino, amidino, guanidino, arylamino,
- 20 heteroarylamino, N-linked heterocyclic for instance an optionally 4-substituted 1,2,3-triazol-1-yl group;
- an aryl- or heteroaryl-halide group such as an aryl- or hetero-aryl chloride or bromide or iodide may be converted by transition metal mediated coupling, especially Pd(0) mediated coupling into a range of aryl-, heteroaryl, alkenyl, alkynyl, acyl, alkylthio, or alkyl- or dialkyl-
- 25 amino substituted aryl or heteroaryl groups;
- an aryl- or heteroaryl-sulfonate group such as an aryl- or hetero-aryl trifluoromethanesulfonate may be converted by transition metal mediated coupling, especially Pd(0) mediated coupling into a range of aryl-, heteroaryl, alkenyl, alkynyl, acyl, alkylthio, or alkyl- or dialkyl-amino substituted aryl or heteroaryl groups;
- 30 an aryl- or heteroaryl-halide group such as an aryl- or hetero-aryl chloride or bromide or iodide may be converted by transition metal mediated coupling, especially Pd(0) mediated coupling into a range of trialkyltin, dialkylboronate, trialkoxysilyl, substituted aryl or heteroaryl groups useful as intermediates for the synthesis of compounds of the invention;

an azido group may be converted for instance into a 1,2,3-triazolyl or amine and thence by methods that are well known in the art into any of the range common amine derivatives such as acylamino for instance acetamido group;

a carboxylic acid group may be converted into trifloromethyl, hydroxymethyl,

- 5 alkoxy carbonyl, aminocarbonyl optionally substituted on nitrogen, formyl, or acyl groups;

a cyano group may be converted into a tetrazole, or an imidate, an amidine, an amidrazone, an N-hydroxyamidrazone, an amide, a thioamide, an ester, or an acid and thence by methods that are well known in the art into any of the range of heterocycles derived from such nitrile derivatives;

- 10 a hydroxy group may be converted for instance into an alkoxy, cyano, azido, alkylthio, keto and oximino, fluoro, bromo, chloro, iodo, alkyl- or aryl-sulfonyloxy for instance trifluoromethanesulfonate, methanesulfonate, or tosylsulfonate, silyloxy ; acylamino or thioacylamino , for instance an acetamide (optionally substituted or protected on the amido-nitrogen atom); acyloxy, for instance an acetoxy; phosphono-oxy, heterocyclamino

- 15 (optionally substituted or protected on the amino-nitrogen atom), for instance an isoxazol-3-ylamino or a 1,2,5-thiadiazol-3-ylamino; heterocyclyl linked through nitrogen (optionally substituted on a carbon other than a carbon atom adjacent to the linking nitrogen ring atom), for instance an optionally 4-substituted 1,2,3-triazol-1-yl; or amidino, for instance an 1-(N-cyanoimino)ethylamino group; such conversions of the hydroxy group taking place  
20 directly (for instance by acylation or Mitsunobu reaction) or through the intermediacy of one or more derivatives (for instance a mesylate or an azide);

a silyloxy group may be converted into a hydroxy group or into the groups that may be obtained from a hydroxy group (either directly or through the intermediacy of a hydroxy group);

- 25 a keto group may be converted into a hydroxy, thiocarbonyl, oximino, or difluoro group; a nitro-group may be converted into an amino group and thence by methods that are well known in the art into any of the range common amine derivatives such as acylamino for instance acetamido group;

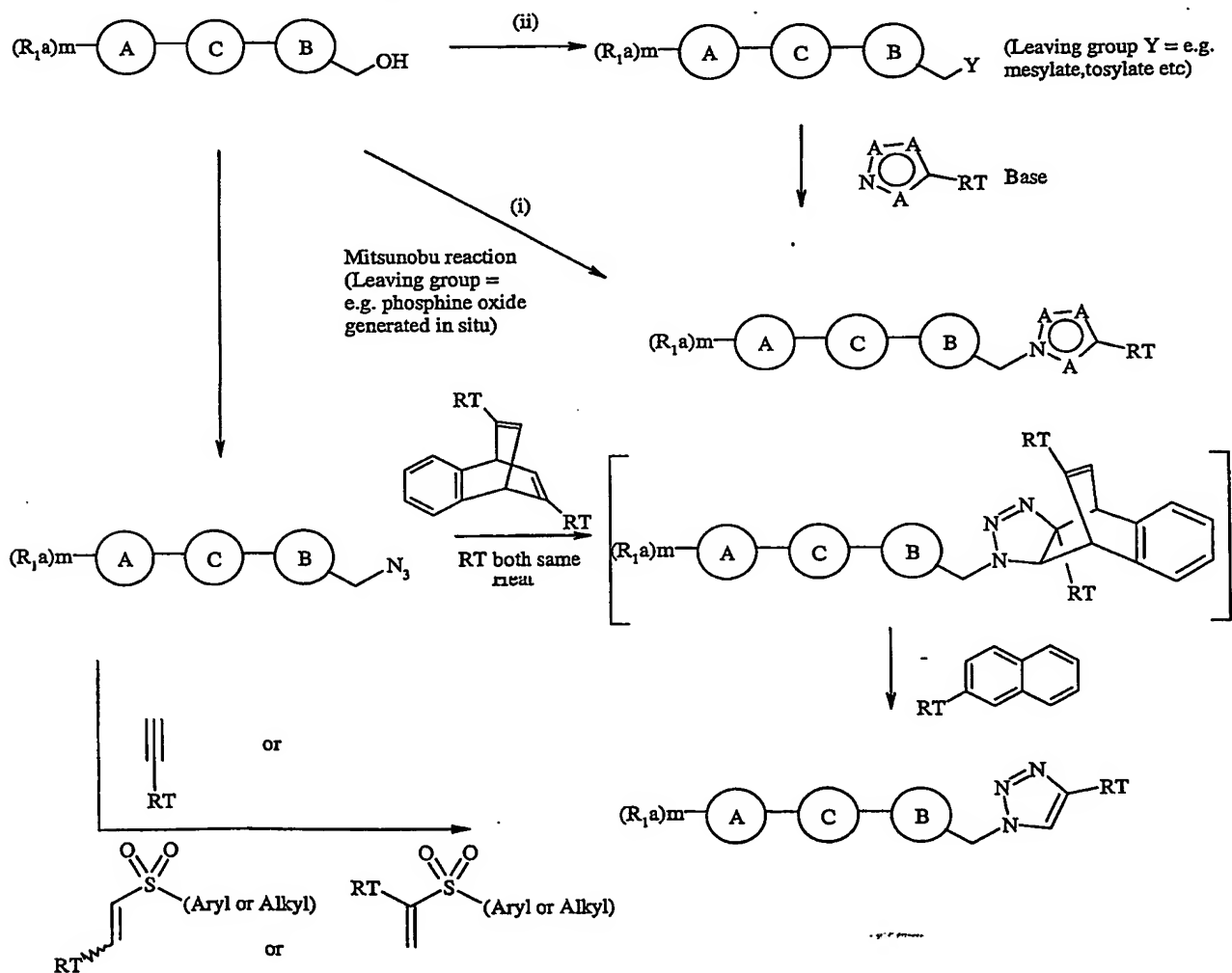
an optionally substituted aromatic or heteroaromatic ring C' may be converted into another

- 30 aromatic or heteroaromatic ring C' by introduction of a new substituent (R2a to R6a or R2a' or R6a') or by refunctionalisation of an existing substituent (R2a to R6a or R2a' or R6a'); a heterocyclamino group (optionally substituted or protected on the amino-nitrogen atom) may be converted into another heterocyclyl amino group (optionally substituted or protected

on the amino-nitrogen atom) by refunctionalisation, for instance by protection or deprotection, of the amino-nitrogen atom, by introduction of a new ring substituent, or by refunctionalisation of an existing ring substituent;

a heterocyclyl group linked through nitrogen (optionally substituted on a carbon other than a carbon atom adjacent to the linking nitrogen ring atom) may be converted into another heterocyclyl group linked through nitrogen (optionally substituted on a carbon other than a carbon atom adjacent to the linking nitrogen ring atom) by introduction of a new ring substituent or by refunctionalisation of an existing ring substituent, for instance by modifying the 4-substituent of a 4-substituted 1,2,3-triazol-1-yl group.

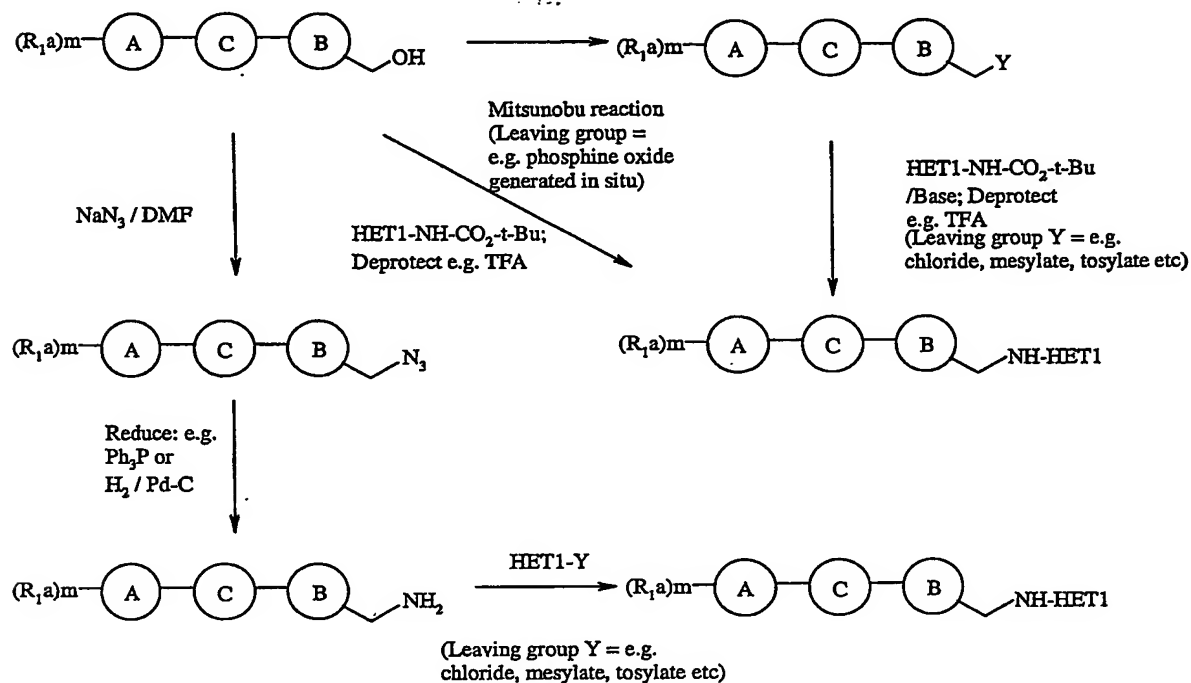
10 For instance, examples drawn from the methods for conversion of a hydroxy group into an optionally substituted triazole group are illustrated by the scheme:



Examples drawn from the range of regioselective methods that proceed under very mild

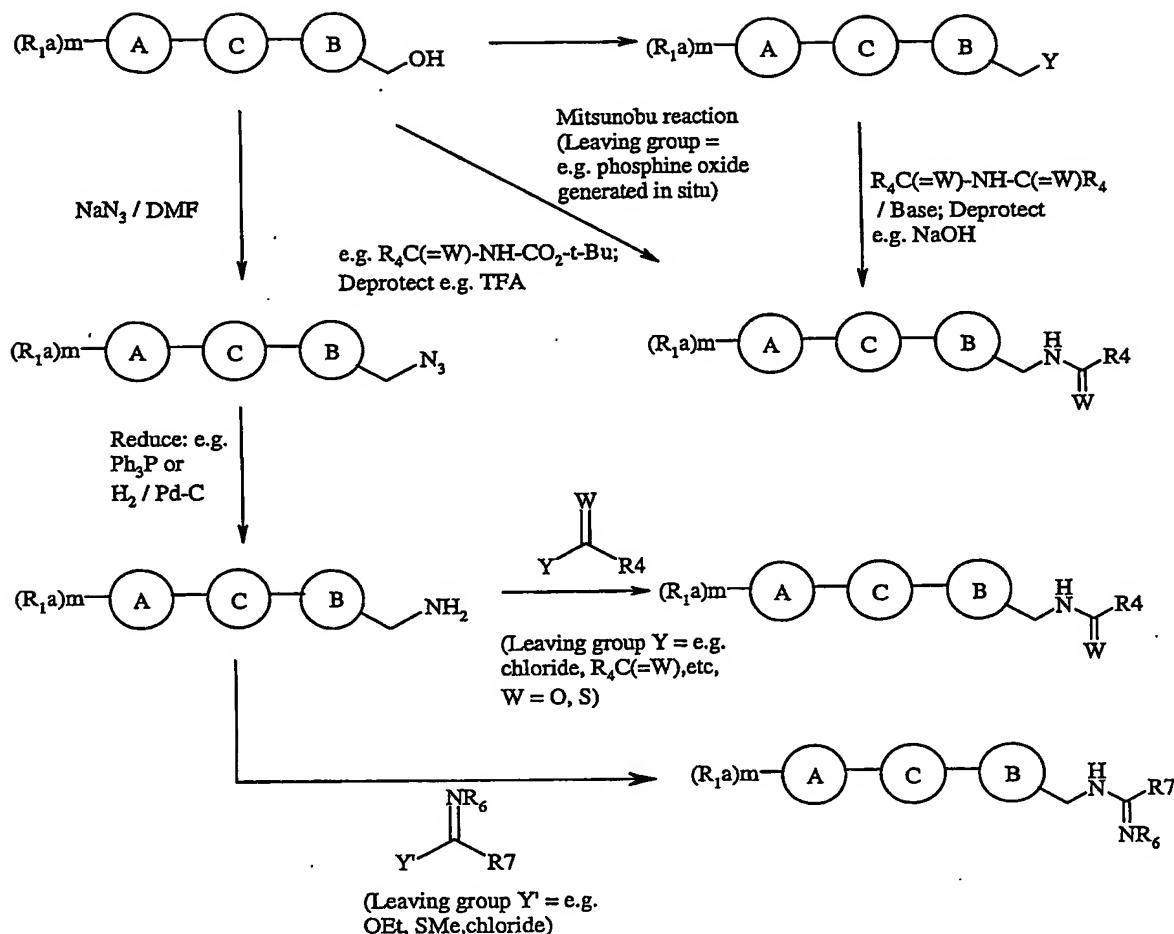
15 conditions are further illustrated by processes (f), (g), and (h).

Examples drawn from the methods for conversion of a hydroxy group into an optionally substituted heterocyclamino group are illustrated by the scheme:

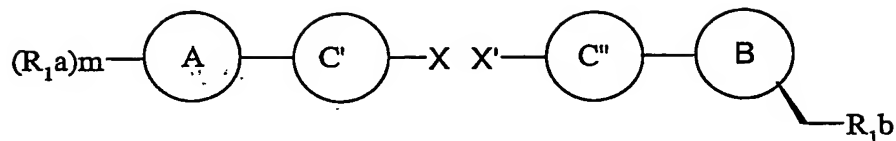


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Examples drawn from the methods for conversion of a hydroxy group into an optionally substituted amidine, amide or thioamide group are illustrated by the scheme:



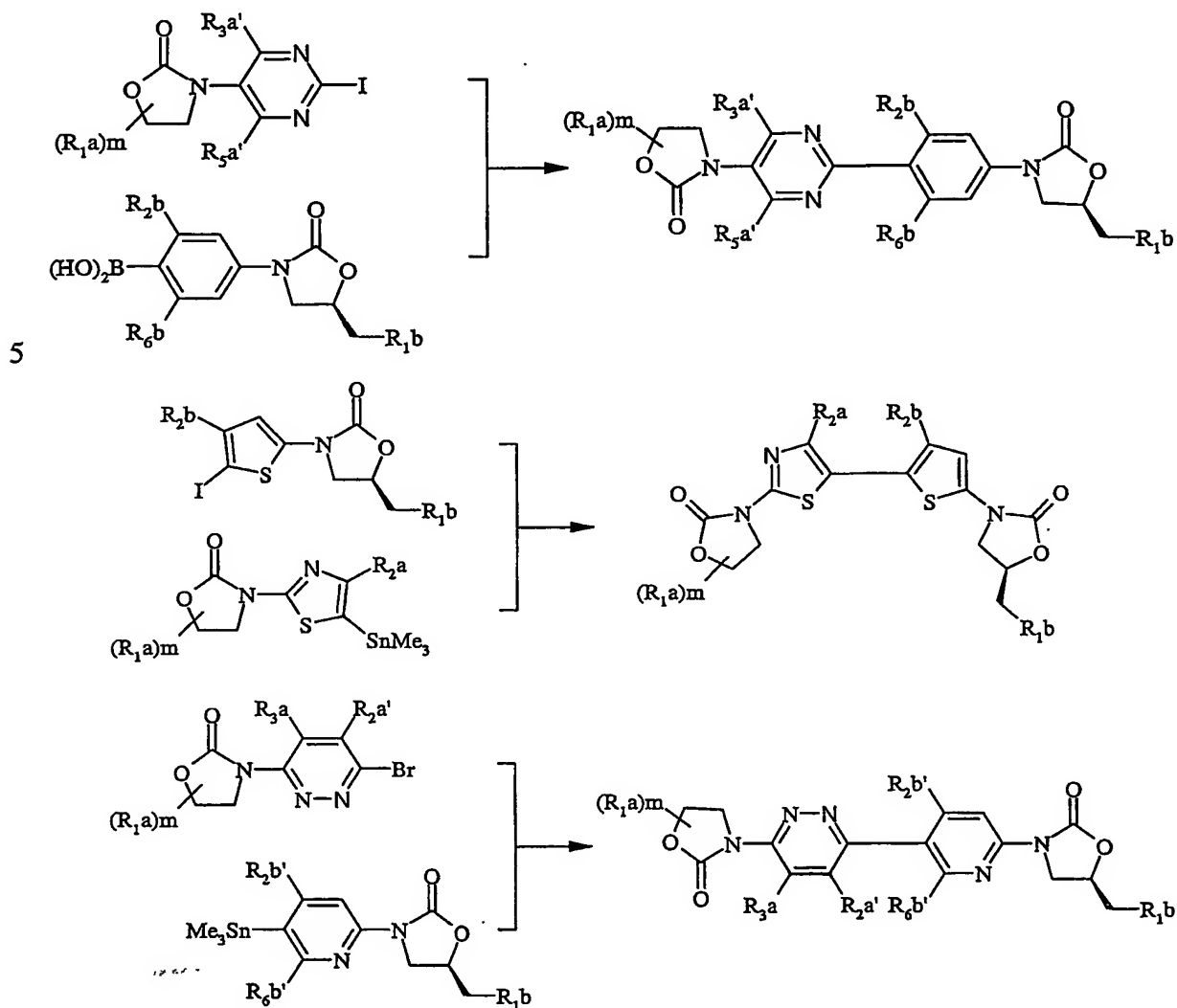
- (b) by reaction of a molecule of a compound of formula (IIa) (wherein X is a leaving group useful in palladium coupling, for example boronate, trimethyl tin, trialkoxysilyl, alkanesulfonyloxy for instance trifluoromethanesulfonyloxy, iodo and bromo) with a
- 5 molecule of a compound of formula (IIb) (wherein X' is a leaving group useful in palladium coupling, for example boronate, trimethyl tin, trialkoxysilyl, alkanesulfonyloxy for instance trifluoromethanesulfonyloxy, iodo and bromo) wherein X and X' are chosen such that an heteroaryl-aryl, or heteroaryl-heteroaryl bond replaces the heteroaryl-X and aryl-X' (or heteroaryl-X') bonds. Such methods are now well known, see for instance
- 10 J.K. Stille, *Angew Chem. Int. Ed. Eng.*, 1986, 25, 509-524; N. Miyaura and A Suzuki, *Chem. Rev.*, 1995, 95, 2457-2483, D. Baranano, G. Mann, and J.F. Hartwig, *Current Org. Chem.*, 1997, 1, 287-305, S.P. Stanforth, *Tetrahedron*, 54 1998, 263-303, and P.R. Parry, C. Wang, A.S. Batsanov, M.R. Bryce, and B. Tarbit, *J. Org. Chem.*, 2002, 67, 7541-7543.



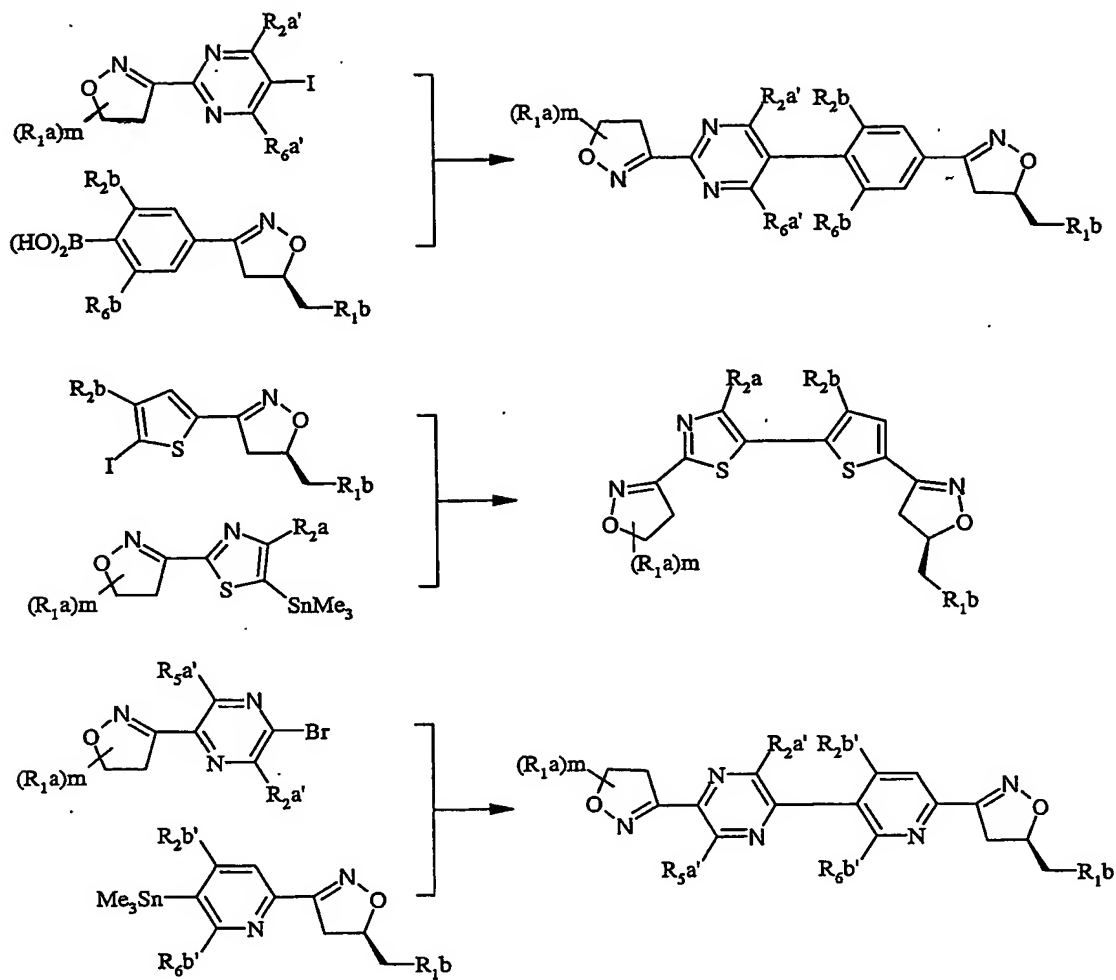
(IIa)

(IIIb)

The method can be used to prepare compounds of formula (I) or (IA) where rings A and B are the same; for instance where both rings A and B are oxazolidinones,

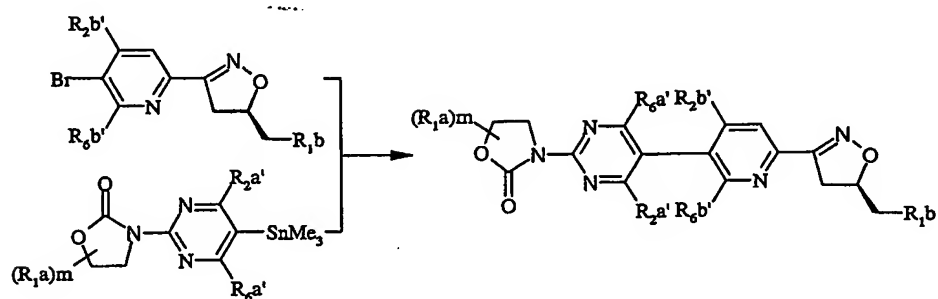
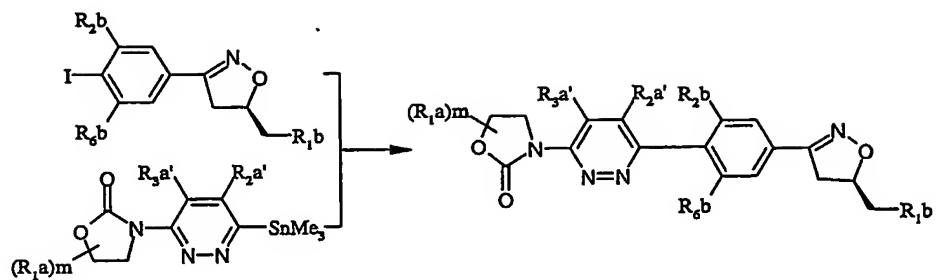


or for instance where both rings A and B are isoxazolines:

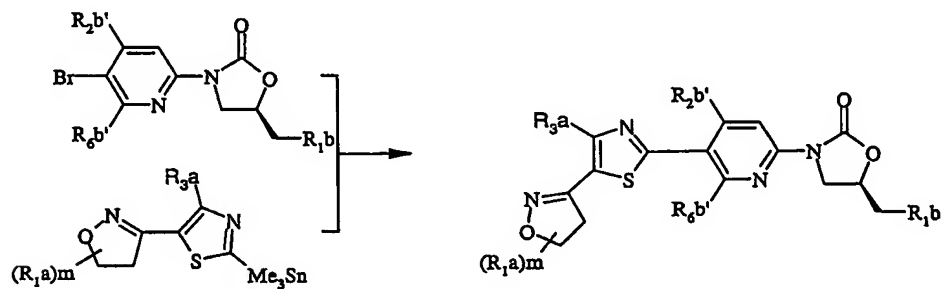
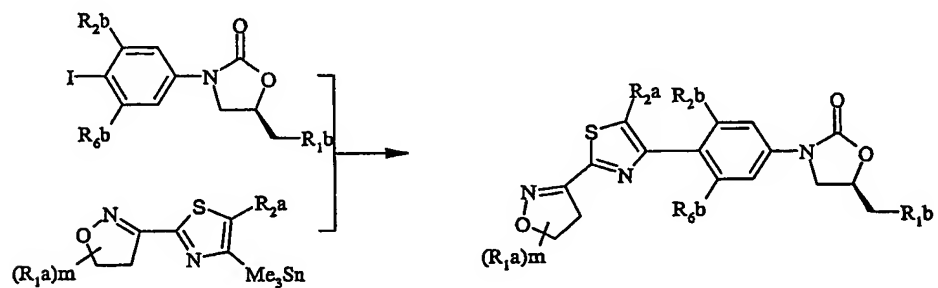
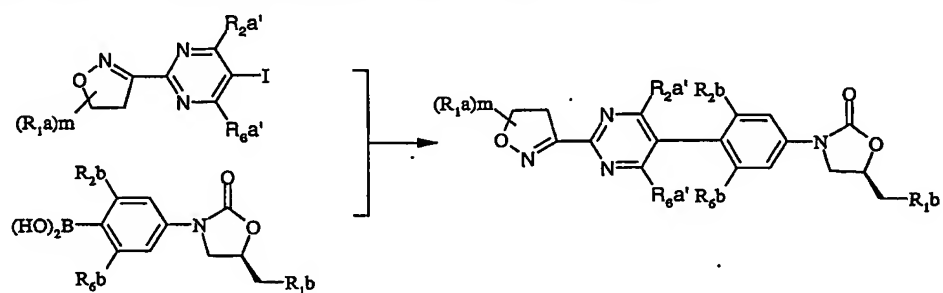


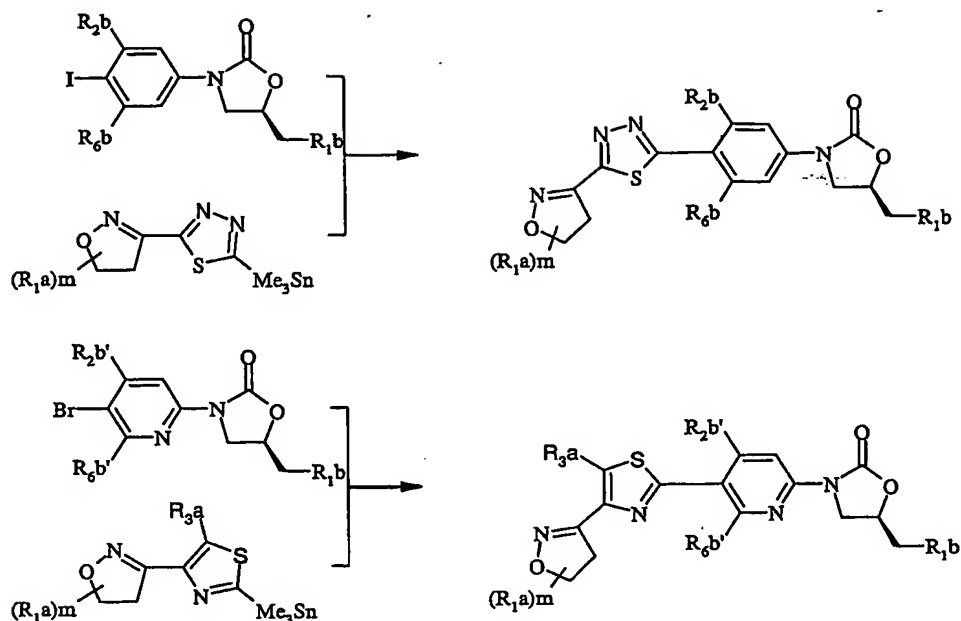
Similarly, this chemistry may be applied to the preparation of compounds of formula (I) or (IA) in which ring A and ring B are dissimilar, for instance where ring A is oxazolidinone 5 and ring B is isoxazoline, or





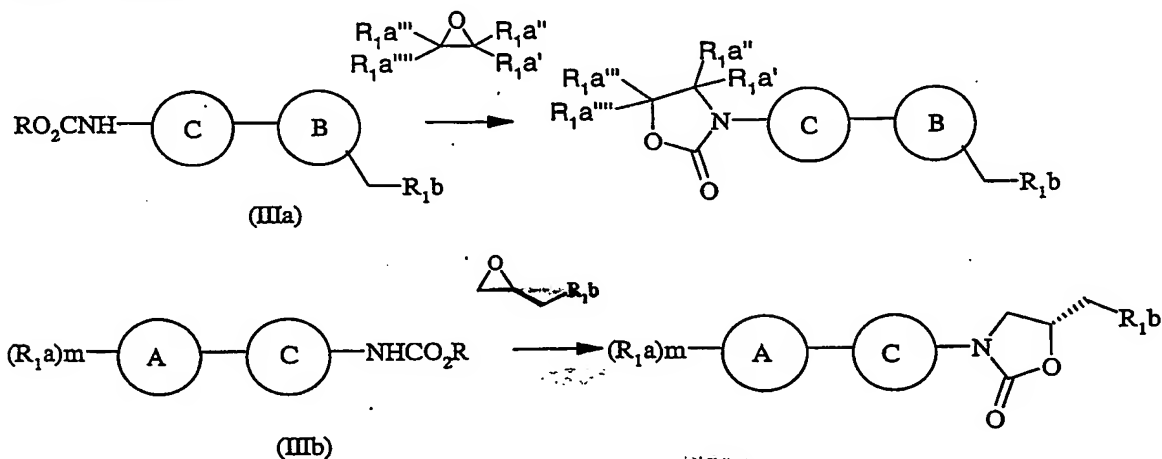
for example in which ring A is isoxazoline and ring B is oxazolidinone.





The aryl isoxazolines and aryl oxazolidinones required as reagents for process b) or as intermediates for the preparation of reagents for process b) may be prepared by standard organic methods, for instance by methods analogous to those set out in process sections c) and h). Methods for the introduction and interconversion of Groups X and X' are well known in the art.

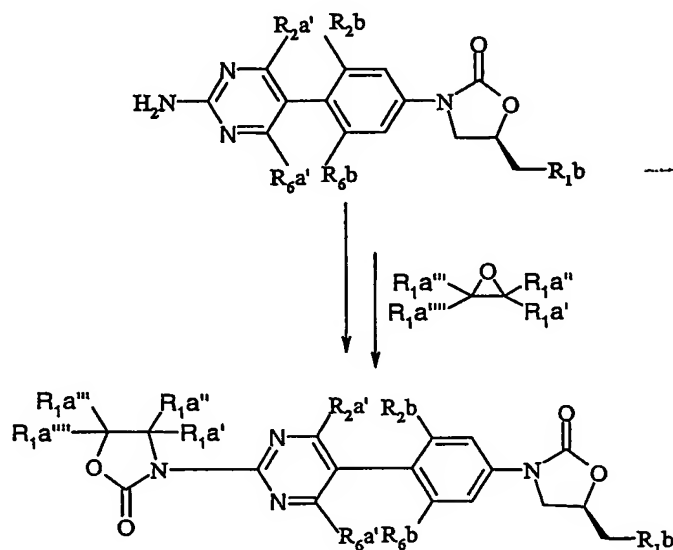
(c) by reaction of a (hetero)biaryl derivative (IIIa) or (IIIb) carbamate with an appropriately substituted oxirane (wherein 0, 1, or 2 of  $R_1a'$ - $R_1a''''$  are substitutents as defined for  $R_1a$  and the remainder are hydrogen) to form an oxazolidinone ring at the undeveloped aryl position.



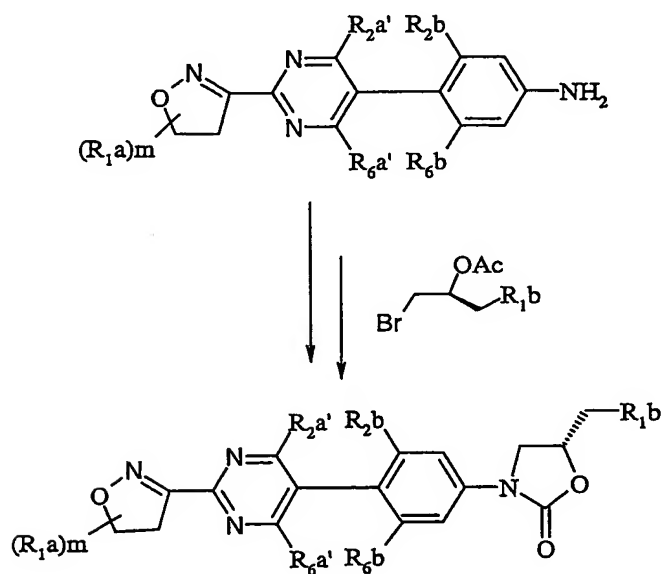
Variations on this process in which the carbamate is replaced by an isocyanate or by an amine or/and in which the oxirane is replaced by an equivalent reagent X-

$C(R_{1a'}) (R_{1a''}) C(R_{1a'''}) (O\text{-optionally protected}) (R_{1a''''})$  or  $X-CH_2CH(O\text{-optionally protected})CH_2R_{1b}$  where  $X$  is a displaceable group are also well known in the art.

For example,



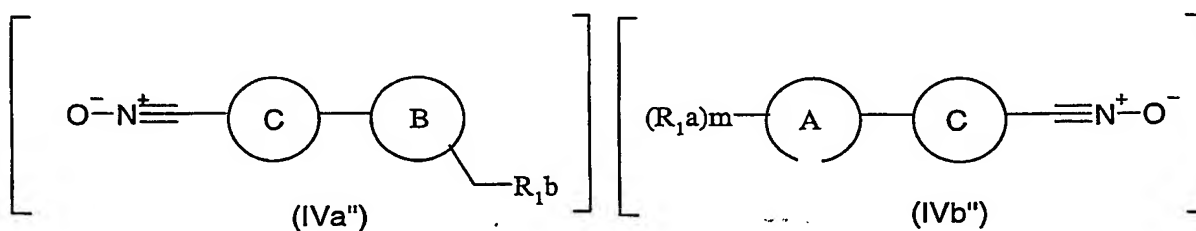
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(d) by reaction of a (hetero)biaryl derivative (IVa) or (IVb) to form an isoxazoline ring at the undeveloped aryl position.

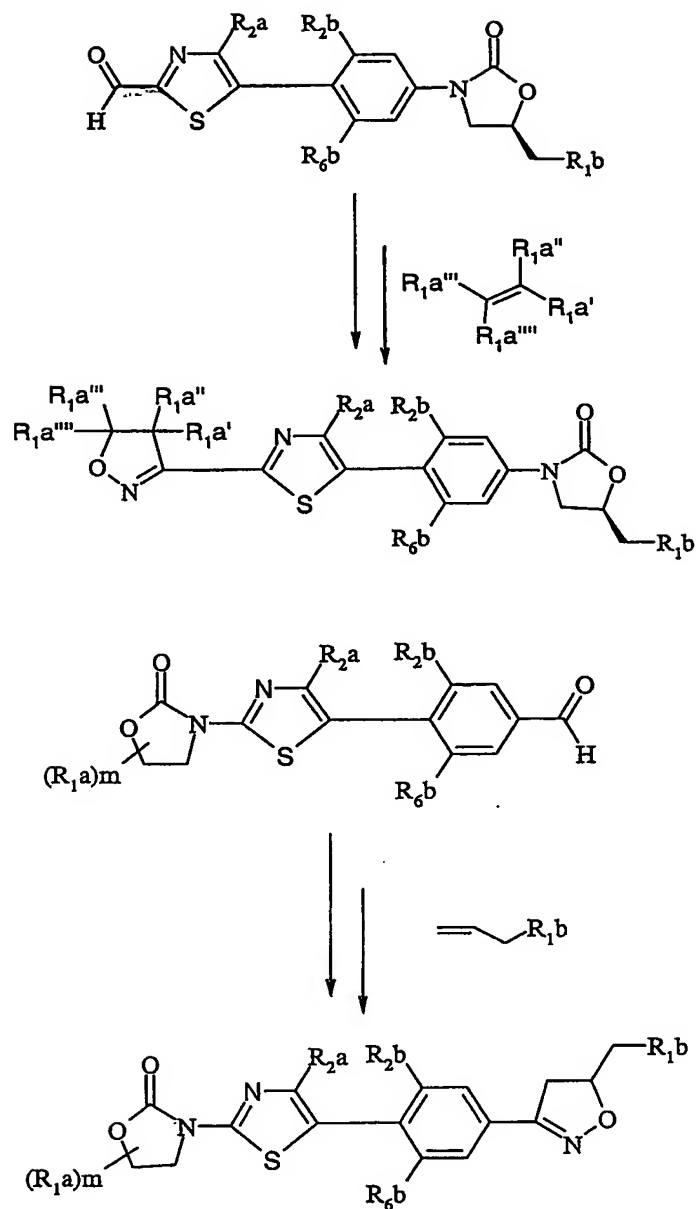


10 structure.



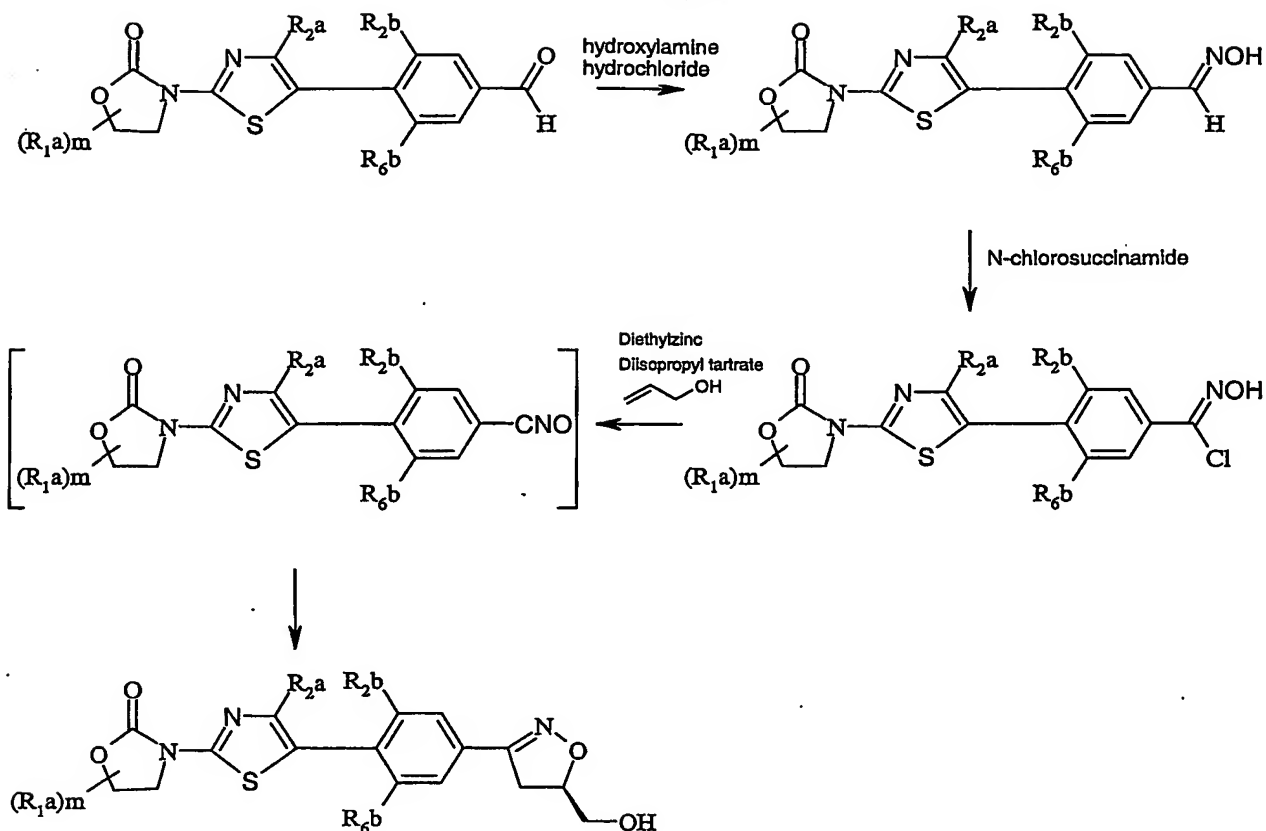
For example, oxidation of an appropriately substituted biphenylcarboxaldehyde oxime in the presence of an appropriately substituted allyl derivative gives an isoxazoline of the required

-62-



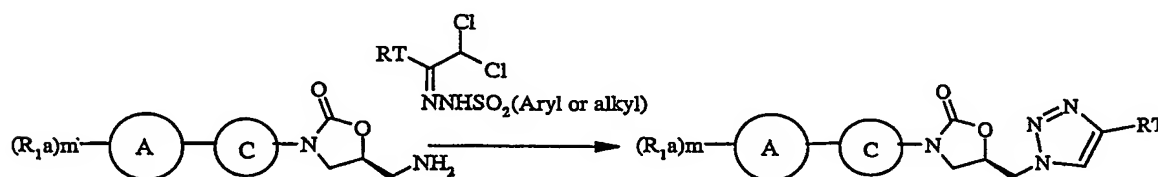
Enantioselective synthesis of 2-isoxazolines via asymmetric cycloaddition of nitrile  
 5 oxides to olefins has been achieved by the use of chiral auxiliaries. For instance, when the alcohol is an allyl alcohol the desired stereochemistry at ring B can be obtained in reactions conducted in the presence of (*R,R*)-diisopropyl tartrate (or (*S,S*)-diisopropyl tartrate depending on the desired stereochemistry) as a chiral auxiliary (Yutaka Ukaji *et al. Chem. Letters*, 1993, 1847-1850). Other chiral auxiliaries may also be employed with other olefins (see for  
 10 instance Takahiko Akayama *et al.*, *Tet. Letters*, 1992, 33, 5763-5766; and Jeffrey Stack *et al.*, *Tetrahedron*, 1993, 49, 995-1008 and references therein).

-63-



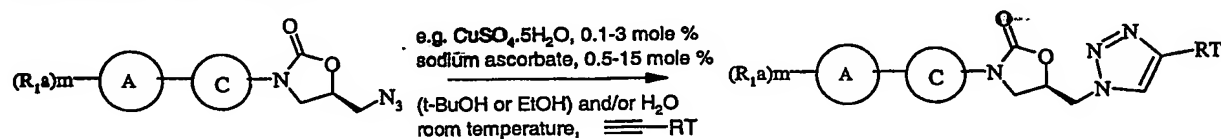
(e) for HET2 as optionally substituted 1,2,3-triazoles, compounds of the formula (I) may be made by cycloaddition via the azide (wherein the substituent at the position of R<sub>1a</sub> in (I) is 5 azide) to acetylenes, or to acetylene equivalents such as optionally substituted cyclohexa-1,4-dienes or optionally substituted ethylenes bearing eliminatable substituents such as arylsulfonyl;

(f) for HET2 as 4-substituted 1,2,3-triazole compounds of formula (I) may be made by reacting aminomethyloxazolidinones with 1,1-dihaloketone sulfonylhydrazones (Sakai, Kuni hazu; Hida, Nobuko; Kondo, Kiyosi; *Bull. Chem. Soc. Jpn.*, **59**, 1986, 179-183; Sakai, Kunikazu; Tsunemoto, Daiei; Kobori, Takeo; Kondo, Kiyoshi; Hido, Noboko EP 103840 A2 19840328); for instance

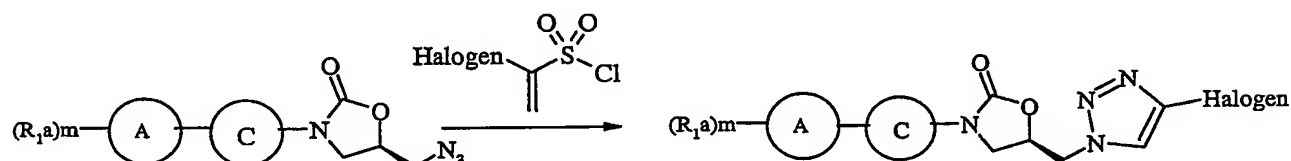


(g) for HET2 as 4-substituted 1,2,3-triazole compounds of formula (I) may also be made by reacting azidomethyl oxazolidinones with terminal alkynes using Cu(I) catalysis in e.g.

aqueous alcoholic solution at ambient temperatures to give 4-substituted 1,2,3-triazoles (V.V. Rostovtsev, L.G. Green, V.V. Fokin, and K.B. Sharpless, *Angew. Chem. Int. Ed.*, 2002, 41, 2596-2599); for instance



- 5 (h) for HET2 as 4-halogenated 1,2,3-triazole compounds of formula (I) may also be made by reacting azidomethyl oxazolidinones with halovinylsulfonyl chlorides at a temperature between 0 °C and 100 °C either neat or in an inert diluent such as chlorobenzene, chloroform or dioxan; for instance



10

The removal of any protecting groups, the formation of a pharmaceutically-acceptable salt and/or the formation of an *in vivo* hydrolysable ester are within the skill of an ordinary organic chemist using standard techniques. Furthermore, details on these steps, for example the preparation of in-vivo hydrolysable ester prodrugs has been provided, for

15 example, in the section above on such esters.

When an optically active form of a compound of the invention is required, it may be obtained by carrying out one of the above procedures using an optically active starting material (formed, for example, by asymmetric induction of a suitable reaction step), or by resolution of a racemic form of the compound or intermediate using a standard procedure, or

20 by chromatographic separation of diastereoisomers (when produced). Enzymatic techniques may also be useful for the preparation of optically active compounds and/or intermediates.

Similarly, when a pure regioisomer of a compound of the invention is required, it may be obtained by carrying out one of the above procedures using a pure regioisomer as a starting material, or by resolution of a mixture of the regioisomers or intermediates using a

25 standard procedure.

According to a further feature of the invention there is provided a compound of the invention, or a pharmaceutically-acceptable salt, or in-vivo hydrolysable ester thereof for use in a method of treatment of the human or animal body by therapy.

According to a further feature of the present invention there is provided a method for

producing an antibacterial effect in a warm blooded animal, such as man, in need of such treatment, which comprises administering to said animal an effective amount of a compound of the present invention, or a pharmaceutically-acceptable salt, or in-vivo hydrolysable ester thereof.

5       The invention also provides a compound of the invention, or a pharmaceutically-acceptable salt, or in-vivo hydrolysable ester thereof, for use as a medicament; and the use of a compound of the invention of the present invention, or a pharmaceutically-acceptable salt, or in-vivo hydrolysable ester thereof, in the manufacture of a medicament for use in the production of an antibacterial effect in a warm blooded animal, such as man.

10       In order to use a compound of the invention, an in-vivo hydrolysable ester or a pharmaceutically-acceptable salt thereof, including a pharmaceutically-acceptable salt of an in-vivo hydrolysable ester, (hereinafter in this section relating to pharmaceutical composition "a compound of this invention") for the therapeutic (including prophylactic) treatment of mammals including humans, in particular in treating infection, it is normally formulated in  
15 accordance with standard pharmaceutical practice as a pharmaceutical composition.

Therefore in another aspect the present invention provides a pharmaceutical composition which comprises a compound of the invention, an in-vivo hydrolysable ester or a pharmaceutically-acceptable salt thereof, including a pharmaceutically-acceptable salt of an in-vivo hydrolysable ester, and a pharmaceutically-acceptable diluent or carrier.

20       The compositions of the invention may be in a form suitable for oral use (for example as tablets, lozenges, hard or soft capsules, aqueous or oily suspensions, emulsions, dispersible powders or granules, syrups or elixirs), for topical use (for example as creams, ointments, gels, or aqueous or oily solutions or suspensions), for administration as eye-drops, for administration by inhalation (for example as a finely divided powder or a liquid aerosol), for  
25 administration by insufflation (for example as a finely divided powder) or for parenteral administration (for example as a sterile aqueous or oily solution for intravenous, subcutaneous, sub-lingual, intramuscular or intramuscular dosing or as a suppository for rectal dosing).

In addition to the compounds of the present invention, the pharmaceutical composition  
30 of this invention may also contain (ie through co-formulation) or be co-administered (simultaneously, sequentially or separately) with one or more known drugs selected from other clinically useful antibacterial agents (for example,  $\beta$ -lactams, macrolides, quinolones or aminoglycosides) and/or other anti-infective agents (for example, an antifungal triazole or



amphotericin). These may include carbapenems, for example meropenem or imipenem, to broaden the therapeutic effectiveness. Compounds of this invention may also be co-formulated or co-administered with bactericidal/permeability-increasing protein (BPI) products or efflux pump inhibitors to improve activity against gram negative bacteria and  
5 bacteria resistant to antimicrobial agents.

The compositions of the invention may be obtained by conventional procedures using conventional pharmaceutical excipients, well known in the art. Thus, compositions intended for oral use may contain, for example, one or more colouring, sweetening, flavouring and/or preservative agents. A pharmaceutical composition to be dosed intravenously may contain  
10 advantageously (for example to enhance stability) a suitable bactericide, antioxidant or reducing agent, or a suitable sequestering agent.

Suitable pharmaceutically acceptable excipients for a tablet formulation include, for example, inert diluents such as lactose, sodium carbonate, calcium phosphate or calcium carbonate, granulating and disintegrating agents such as corn starch or algenic acid; binding  
15 agents such as starch; lubricating agents such as magnesium stearate, stearic acid or talc; preservative agents such as ethyl or propyl p-hydroxybenzoate, and anti-oxidants, such as ascorbic acid. Tablet formulations may be uncoated or coated either to modify their disintegration and the subsequent absorption of the active ingredient within the gastrointestinal tract, or to improve their stability and/or appearance, in either case, using  
20 conventional coating agents and procedures well known in the art.

Compositions for oral use may be in the form of hard gelatin capsules in which the active ingredient is mixed with an inert solid diluent, for example, calcium carbonate, calcium phosphate or kaolin, or as soft gelatin capsules in which the active ingredient is mixed with water or an oil such as peanut oil, liquid paraffin, or olive oil.

25 Aqueous suspensions generally contain the active ingredient in finely powdered form together with one or more suspending agents, such as sodium carboxymethylcellulose, methylcellulose, hydroxypropylmethylcellulose, sodium alginate, polyvinyl-pyrrolidone, gum tragacanth and gum acacia; dispersing or wetting agents such as lecithin or condensation products of an alkylene oxide with fatty acids (for example polyoxethylene stearate), or  
30 condensation products of ethylene oxide with long chain aliphatic alcohols, for example heptadecaethyleneoxycetanol, or condensation products of ethylene oxide with partial esters derived from fatty acids and a hexitol such as polyoxyethylene sorbitol monooleate, or condensation products of ethylene oxide with long chain aliphatic alcohols, for example

heptadecaethyleneoxycetanol, or condensation products of ethylene oxide with partial esters derived from fatty acids and a hexitol such as polyoxyethylene sorbitol monooleate, or condensation products of ethylene oxide with partial esters derived from fatty acids and hexitol anhydrides, for example polyethylene sorbitan monooleate. The aqueous suspensions  
5 may also contain one or more preservatives (such as ethyl or propyl p-hydroxybenzoate, anti-oxidants (such as ascorbic acid), colouring agents, flavouring agents, and/or sweetening agents (such as sucrose, saccharine or aspartame).

Oily suspensions may be formulated by suspending the active ingredient in a vegetable oil (such as arachis oil, olive oil, sesame oil or coconut oil) or in a mineral oil (such  
10 as liquid paraffin). The oily suspensions may also contain a thickening agent such as beeswax, hard paraffin or cetyl alcohol. Sweetening agents such as those set out above, and flavouring agents may be added to provide a palatable oral preparation. These compositions may be preserved by the addition of an anti-oxidant such as ascorbic acid.

Dispersible powders and granules suitable for preparation of an aqueous suspension by  
15 the addition of water generally contain the active ingredient together with a dispersing or wetting agent, suspending agent and one or more preservatives. Suitable dispersing or wetting agents and suspending agents are exemplified by those already mentioned above. Additional excipients such as sweetening, flavouring and colouring agents, may also be present.

20 The pharmaceutical compositions of the invention may also be in the form of oil-in-water emulsions. The oily phase may be a vegetable oil, such as olive oil or arachis oil, or a mineral oil, such as for example liquid paraffin or a mixture of any of these. Suitable emulsifying agents may be, for example, naturally-occurring gums such as gum acacia or gum tragacanth, naturally-occurring phosphatides such as soya bean, lecithin, an esters or partial  
25 esters derived from fatty acids and hexitol anhydrides (for example sorbitan monooleate) and condensation products of the said partial esters with ethylene oxide such as polyoxyethylene sorbitan monooleate. The emulsions may also contain sweetening, flavouring and preservative agents.

Syrups and elixirs may be formulated with sweetening agents such as glycerol,  
30 propylene glycol, sorbitol, aspartame or sucrose, and may also contain a demulcent, preservative, flavouring and/or colouring agent.

The pharmaceutical compositions may also be in the form of a sterile injectable aqueous or oily suspension, which may be formulated according to known procedures using

one or more of the appropriate dispersing or wetting agents and suspending agents, which have been mentioned above. A sterile injectable preparation may also be a sterile injectable solution or suspension in a non-toxic parenterally-acceptable diluent or solvent, for example a solution in 1,3-butanediol. Solubility enhancing agents, for example cyclodextrins may be  
5 used.

Compositions for administration by inhalation may be in the form of a conventional pressurised aerosol arranged to dispense the active ingredient either as an aerosol containing finely divided solid or liquid droplets. Conventional aerosol propellants such as volatile fluorinated hydrocarbons or hydrocarbons may be used and the aerosol device is conveniently  
10 arranged to dispense a metered quantity of active ingredient.

For further information on formulation the reader is referred to Chapter 25.2 in Volume 5 of Comprehensive Medicinal Chemistry (Corwin Hansch; Chairman of Editorial Board), Pergamon Press 1990.

The amount of active ingredient that is combined with one or more excipients to  
15 produce a single dosage form will necessarily vary depending upon the host treated and the particular route of administration. For example, a formulation intended for oral administration to humans will generally contain, for example, from 50 mg to 5 g of active agent compounded with an appropriate and convenient amount of excipients which may vary from about 5 to about 98 percent by weight of the total composition. Dosage unit forms will  
20 generally contain about 200 mg to about 2 g of an active ingredient. For further information on Routes of Administration and Dosage Regimes the reader is referred to Chapter 25.3 in Volume 5 of Comprehensive Medicinal Chemistry (Corwin Hansch; Chairman of Editorial Board), Pergamon Press 1990.

A suitable pharmaceutical composition of this invention is one suitable for oral  
25 administration in unit dosage form, for example a tablet or capsule which contains between 1mg and 1g of a compound of this invention, preferably between 100mg and 1g of a compound. Especially preferred is a tablet or capsule which contains between 50mg and 800mg of a compound of this invention, particularly in the range 100mg to 500mg.

In another aspect a pharmaceutical composition of the invention is one suitable for  
30 intravenous, subcutaneous or intramuscular injection, for example an injection which contains between 0.1% w/v and 50% w/v (between 1mg/ml and 500mg/ml) of a compound of this invention.

Each patient may receive, for example, a daily intravenous, subcutaneous or intramuscular dose of  $0.5 \text{ mgkg}^{-1}$  to  $20 \text{ mgkg}^{-1}$  of a compound of this invention, the composition being administered 1 to 4 times per day. In another embodiment a daily dose of  $5 \text{ mgkg}^{-1}$  to  $20 \text{ mgkg}^{-1}$  of a compound of this invention is administered. The intravenous,

5 subcutaneous and intramuscular dose may be given by means of a bolus injection.

Alternatively the intravenous dose may be given by continuous infusion over a period of time.

Alternatively each patient may receive a daily oral dose which may be approximately equivalent to the daily parenteral dose, the composition being administered 1 to 4 times per day.

10 In the above other, pharmaceutical composition, process, method, use and medicament manufacture features, the alternative and preferred embodiments of the compounds of the invention described herein also apply.

#### Antibacterial Activity :

15 The pharmaceutically-acceptable compounds of the present invention are useful antibacterial agents having a good spectrum of activity in vitro against standard Gram-positive organisms, which are used to screen for activity against pathogenic bacteria. Notably, the pharmaceutically-acceptable compounds of the present invention show activity against enterococci, pneumococci and methicillin resistant strains of *S. aureus* and coagulase  
20 negative staphylococci, together with haemophilus and moraxella strains. The antibacterial spectrum and potency of a particular compound may be determined in a standard test system.

The (antibacterial) properties of the compounds of the invention may also be demonstrated and assessed in-vivo in conventional tests, for example by oral and/or intravenous dosing of a compound to a warm-blooded mammal using standard techniques.

25 The following results were obtained on a standard in-vitro test system. The activity is described in terms of the minimum inhibitory concentration (MIC) determined by the agar-dilution technique with an inoculum size of  $10^4$  CFU/spot. Typically, compounds are active in the range 0.01 to  $256 \mu\text{g/ml}$ .

Staphylococci were tested on agar, using an inoculum of  $10^4$  CFU/spot and an  
30 incubation temperature of  $37^\circ\text{C}$  for 24 hours - standard test conditions for the expression of methicillin resistance.

Streptococci and enterococci were tested on agar supplemented with 5% defibrinated horse blood, an inoculum of  $10^4$  CFU/spot and an incubation temperature of  $37^\circ\text{C}$  in an

atmosphere of 5% carbon dioxide for 48 hours - blood is required for the growth of some of the test organisms. Fastidious Gram negative organisms were tested in Mueller-Hinton broth, supplemented with hemin and NAD, grown aerobically for 24 hours at 37°C, and with an inoculum of  $5 \times 10^4$  CFU/well.

5 For example, the following results were obtained for the compound of Example 1:

<u>Organism</u>		<u>MIC (<math>\mu</math>g/ml)</u>
Staphylococcus aureus:	MSQS	2
	MRQR	2
Streptococcus pneumoniae		0.25
10 Haemophilus influenzae		8
Moraxella catarrhalis		2
Enterococcus faecium		2
Linezolid Resistant Streptococcus pneumoniae		4

15 MSQS = methicillin sensitive and quinolone sensitive

MRQR = methicillin resistant and quinolone resistant

Certain intermediates and/or Reference Examples described hereinafter are within the scope of the invention and may also possess useful activity, and are provided as a further feature  
20 of the invention.

The invention is now illustrated but not limited by the following Examples in which unless otherwise stated :-

- (i) evaporations were carried out by rotary evaporation in vacuo and work-up procedures were carried out after removal of residual solids by filtration;
- 25 (ii) operations were carried out at ambient temperature, that is typically in the range 18-26°C and without exclusion of air unless otherwise stated, or unless the skilled person would otherwise work under an inert atmosphere;
- (iii) column chromatography (by the flash procedure) was used to purify compounds and was performed on Merck Kieselgel silica (Art. 9385) unless otherwise stated;
- 30 (iv) yields are given for illustration only and are not necessarily the maximum attainable;
- (v) the structure of the end-products of the invention were generally confirmed by NMR and mass spectral techniques [proton magnetic resonance spectra were generally determined in DMSO- $d_6$  unless otherwise stated using a Varian Gemini 2000 spectrometer operating at a

field strength of 300 MHz, or a Bruker AM250 spectrometer operating at a field strength of 250 MHz; chemical shifts are reported in parts per million downfield from tetramethylsilane as an internal standard ( $\delta$  scale) and peak multiplicities are shown thus: s, singlet; d, doublet; AB or dd, doublet of doublets; dt, doublet of triplets; dm, doublet of multiplets; t, triplet, m, multiplet; br, broad; fast-atom bombardment (FAB) mass spectral data were generally obtained using a Platform spectrometer (supplied by Micromass) run in electrospray and, where appropriate, either positive ion data or negative ion data were collected]; optical rotations were determined at 589nm at 20°C for 0.1M solutions in methanol using a Perkin Elmer Polarimeter 341;

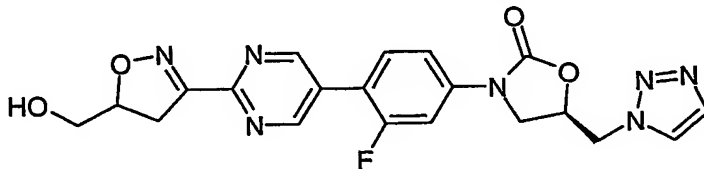
10 (vi) each intermediate was purified to the standard required for the subsequent stage and was characterised in sufficient detail to confirm that the assigned structure was correct; purity was assessed by HPLC, TLC, or NMR and identity was determined by infra-red spectroscopy (IR), mass spectroscopy or NMR spectroscopy as appropriate;

(vii) in which the following abbreviations may be used :-

15 DMF is N,N-dimethylformamide; DMA is N,N-dimethylacetamide; TLC is thin layer chromatography; HPLC is high pressure liquid chromatography; MPLC is medium pressure liquid chromatography; DMSO is dimethylsulfoxide;  $\text{CDCl}_3$  is deuterated chloroform; MS is mass spectroscopy; ESP is electrospray; EI is electron impact; CI is chemical ionisation; APCI is atmospheric pressure chemical ionisation; EtOAc is ethyl acetate; MeOH is  
20 methanol; phosphoryl is  $(\text{HO})_2\text{-P(O)-O-}$ ; phosphiryl is  $(\text{HO})_2\text{-P-O-}$ ; Bleach is "Clorox" 6.15% sodium hypochlorite;

(viii) temperatures are quoted as °C.

**Example 1. 3-(3-Fluoro-4-{2-(5*RS*)-[5-(hydroxymethyl)-4,5-dihydroisoxazol-3-yl]pyrimidin-5-yl}phenyl)-5-(5*RS*)-(1*H*-1,2,3-triazol-1-ylmethyl)-1,3-oxazolidin-2-one**



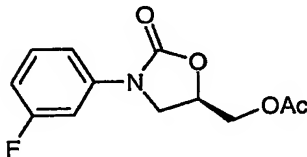
A mixture of (5*RS*)-3-[3-fluoro-4-(trimethylstannyl)phenyl]-5-(1*H*-1,2,3-triazol-1-ylmethyl)-1,3-oxazolidin-2-one (906 mg, 2.13 mM), (5*RS*)-3-(5-bromopyrimidin-2-yl)-5-hydroxymethyl-4,5-dihydroisoxazole (500 mg, 1.94 mM), tris(dibenzylideneacetone)dipalladium (0)-chloroform adduct (200 mg, 0.194 mM, 0.1 equiv.), and tri-2-furylphosphine (89.9 mg, 0.388 mM, 0.2 equiv) was degassed and maintained under an atmosphere of nitrogen. The mixture was treated with anhydrous dioxane (10 ml) and heated at 95 °C for 24 hours. The reaction mixture was cooled and evaporated under reduced pressure. The involatile residue was purified by chromatography on silica gel [elution with 19:1 dichloromethane:methanol] to give the title compound (200 mg).

MS (APCI): 440 (M+1) for C<sub>20</sub>H<sub>18</sub>N<sub>7</sub>O<sub>4</sub>F

NMR (DMSO-d<sub>6</sub>) δ: 3.26-3.56 (m, 4H); 3.96 (dd, 1H); 4.31 (t, 1H); 4.84-4.88 (m, 3H); 5.00 (brs, 1H); 5.19 (m, 1H); 7.44 (dd, 1H); 7.61 (dd, 1H); 7.76 (t, 1H); 7.77 (d, 1H); 8.19 (d, 1H); 9.11 (d, 2H).

The intermediates for this example were prepared as follows:

**20 Acetic acid (5*RS*)-3-(3-fluorophenyl)-1,3-oxazolidin-2-on-5-ylmethyl ester**



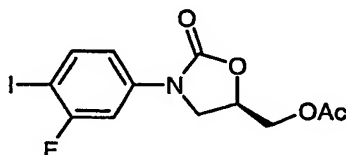
(5*RS*)-3-(3-Fluorophenyl)-5-hydroxymethyl-1,3-oxazolidin-2-one (40 g, 0.189 M, see Upjohn WO 94-13649) was suspended by stirring in dry dichloromethane (400 mL) under nitrogen. Triethylamine (21 g, 0.208 M) and 4-dimethylaminopyridine (0.6 g, 4.9 mM) were added, followed by dropwise addition of acetic anhydride (20.3 g, 0.199 M) over 30 minutes, and stirring continued at ambient temperature for 18 hours. Saturated aqueous sodium bicarbonate (250 mL) was added, the organic phase separated, washed with 2% sodium

dihydrogen phosphate, dried (magnesium sulfate), filtered and evaporated to give the desired product (49.6 g) as an oil.

MS (ESP): 254 ( $MH^+$ ) for  $C_{12}H_{12}FNO_4$

NMR ( $CDCl_3$ )  $\delta$ : 2.02 (s, 3H); 3.84 (dd, 1H); 4.16 (t, 1H); 4.25 (dd, 1H); 4.32 (dd, 1H);  
5 4.95 (m, 1H); 6.95 (td, 1H); 7.32 (d, 1H); 7.43 (t, 1H); 7.51 (d, 1H).

Acetic acid (5R)-3-(3-fluoro-4-iodo-phenyl)-1,3-oxazolidin-2-one-5-ylmethyl ester



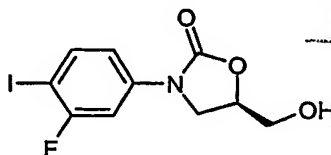
Acetic acid (5R)-3-(3-fluoro-phenyl)-1,3-oxazolidin-2-one-5-ylmethyl ester (15.2 g, 60 mM)  
10 was dissolved in a mixture of chloroform (100 mL) and acetonitrile (100 mL) under nitrogen, and silver trifluoroacetate (16.96 g, 77 mM) added. Iodine (18.07 g, 71 mM) was added in portions over 30 minutes to the vigorously stirred solution, and stirring continued at ambient temperature for 18 hours. As reaction was not complete, a further portion of silver trifluoroacetate (2.64 g, 12 mM) was added and stirring continued for 18 hours. After  
15 filtration, the mixture was added to sodium thiosulfate solution (3%, 200 mL) and dichloromethane (200 mL), and the organic phase separated, washed with sodium thiosulfate (200 mL), saturated aqueous sodium bicarbonate (200 mL), brine (200 mL), dried (magnesium sulfate), filtered and evaporated. The crude product was suspended in isohexane (100 mL), and sufficient diethyl ether added to dissolve out the brown impurity while stirring  
20 for 1 hour. The product was isolated by filtration to give the title compound (24.3 g) as a cream solid.

MS (ESP): 380 ( $MH^+$ ) for  $C_{12}H_{11}FINO_4$

NMR ( $DMSO-d_6$ )  $\delta$ : 2.03 (s, 3H); 3.82 (dd, 1H); 4.15 (t, 1H); 4.24 (dd, 1H); 4.30 (dd, 1H); 4.94 (m, 1H); 7.19 (dd, 1H); 7.55 (dd, 1H); 7.84 (t, 1H).

25

(5R)-3-(3-Fluoro-4-iodophenyl)-5-hydroxymethyl-1,3-oxazolidin-2-one



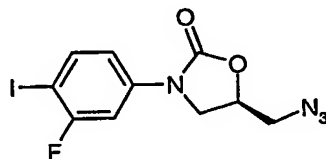


A solution of acetic acid (5*R*)-3-(3-fluoro-4-iodophenyl)-1,3-oxazolidin-2-one-5-ylmethyl ester (30 g, 79 mM) in a mixture of methanol (800 mL) and dichloromethane (240 mL) was treated at ambient temperature with potassium carbonate (16.4 g, 0.119 mM) for 25 minutes, then immediately neutralised by the addition of acetic acid (10 mL) and water (500 mL). The precipitated product was filtered, washed with water, and then dissolved in dichloromethane (1.2 L) to give a the solution that was washed with saturated sodium bicarbonate and then dried (magnesium sulfate). The solution of product was filtered and evaporated to dryness to give the title compound (23 g).

MS (ESP): 338 ( $MH^+$ ) for  $C_{10}H_9FINO_3$

10 NMR (DMSO- $d_6$ )  $\delta$ : 3.53 (m, 1H); 3.67 (m, 1H); 3.82 (dd, 1H); 4.07 (t, 1H); 4.70 (m, 1H); 5.20 (t, 1H); 7.21 (dd, 1H); 7.57 (dd, 1H); 7.81 (t, 1H).

(5*R*)-5-Azidomethyl-3-(3-fluoro-4-iodophenyl)-1,3-oxazolidin-2-one



15 Note: This intermediate compound is considered likely to be explosive so should be used without isolation or treated with extreme caution, particularly at high temperatures.

A stirred solution of (5*R*)-3-(3-fluoro-4-iodophenyl)-5-hydroxymethyl-1,3-oxazolidin-2-one (55.8 g) and triethylamine (46.1 mL) in dry dichloromethane (800 mL) under an atmosphere of dry nitrogen was maintained below room temperature by an ice-bath and treated dropwise with methanesulfonyl chloride (17.9 mL). The stirred reaction mixture was allowed to warm to room temperature during 3 hours and then washed sequentially with water and brine and then dried ( $Na_2SO_4$ ). Solvent was removed under reduced pressure to give the intermediate mesylate as a yellow solid (68 g) that was used without further purification.

25 A stirred solution in DMF (800 mL) of a mixture of the intermediate mesylate (68 g) and sodium azide (32.3 g) was heated at 75°C overnight. The mixture was allowed to cool to room temperature, diluted with water, and extracted twice with ethyl acetate. The combined extracts were washed sequentially with water and brine, and then dried ( $Na_2SO_4$ ). Solvent was removed under reduced pressure to give a yellow oil that was purified by column chromatography on silica-gel [elution with ethyl acetate:hexanes (1:1)] to give the product

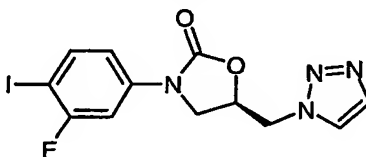
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azide as an off-white solid (49 g). The product could be further purified by trituration with ethyl acetate/hexanes.

$^1\text{H-NMR}$  ( $\text{DMSO-d}_6$ )  $\delta$ : 3.57-3.64 (dd, 1H); 3.70-3.77 (dd, 1H); 3.81-3.87 (dd, 1H); 4.06 (t, 1H); 4.78-4.84 (m, 1H); 7.05-7.09 (ddd, 1H); 7.45 (dd, 1H); 7.68-7.74 (dd, 1H).

5

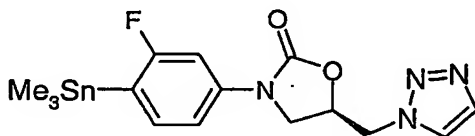
(5R)-3-(3-Fluoro-4-iodophenyl)-5-(1H-1,2,3-triazol-1-ylmethyl)-1,3-oxazolidin-2-one



A stirred solution in dioxan (300 mL) of a mixture of the (5R)-5-azidomethyl-3-(3-fluoro-4-iodophenyl)-1,3-oxazolidin-2-one (30 g) and bicyclo[2.2.1]heptadiene (30 mL) was heated under reflux overnight. The mixture was allowed to cool to room temperature and then evaporated to dryness under reduced pressure to give a brown solid. The brown solid was purified by column chromatography on silica-gel [elution with a gradient from 98:2 to 95:5 methanol:chloroform] to give the product triazole as a pale yellow solid (20 g). The product could be further purified by trituration with dichloromethane/hexanes (1:1) to give an off-white solid.

$^1\text{H-NMR}$  ( $\text{DMSO-d}_6$ )  $\delta$ : 3.86-3.92 (dd, 1H); 4.23 (t, 1H); 4.83 (d, 2H); 5.11-5.19 (m, 1H); 7.12-7.16 (dd, 1H); 7.47-7.51 (dd, 1H); 7.76 (s, 1H); 7.79-7.85 (dd, 1H); 8.16 (s, 1H).

20 (5R)-3-[3-Fluoro-4-(trimethylstannyl)phenyl]-5-(1H-1,2,3-triazol-1-ylmethyl)-1,3-oxazolidin-2-one

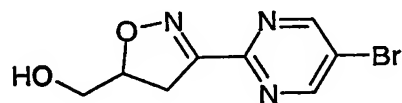


A mixture of (5R)-3-(3-fluoro-4-iodophenyl)-5-(1H-1,2,3-triazol-1-ylmethyl)-1,3-oxazolidin-2-one (5.39 g, 13.9 mmol) and hexamethylditin (5 g, 15.3 mmol) in dioxane (50 mL) under an atmosphere of nitrogen was treated with dichlorobis(triphenylphosphine)palladium (II) (487 mg, 0.69 mmol) and then stirred at 90°C under an atmosphere of nitrogen for 90 minutes. Silica gel (5 g) was added then the solvent removed under reduced pressure. The residual powder was placed on top of a silica gel column (100 g) and eluted (1% methanol in dichloromethane to 2.5% methanol in dichloromethane gradient) to give the desired product (4.545 g).

MS (ESP) 423, 425, 427 (MH<sup>+</sup>) for C<sub>15</sub>H<sub>19</sub>FN<sub>4</sub>O<sub>2</sub>Sn.

<sup>1</sup>H-NMR (DMSO-d<sub>6</sub>)  $\delta$ : 0.32 (s, 9H); 3.90 (dd, 1H); 4.25 (t, 1H); 4.85 (d, 2H); 5.16 (m, 1H); 7.26 (dd, 1H); 7.33 (dd, 1H); 7.41 (dd, 1H); 7.78 (s, 1H); 8.18 (s, 1H).

5 (5*RS*)-3-(5-bromopyrimidin-2-yl)-5-hydroxymethyl-4,5-dihydroisoxazole

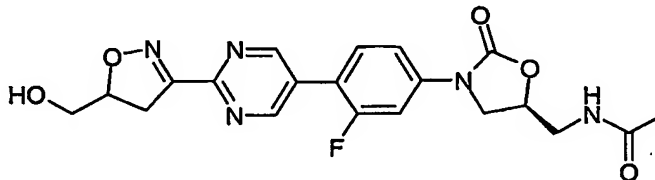


A solution of methylmagnesium chloride in tetrahydrofuran (3M; 13.7 mL, 41.04 mmol) was added slowly to a stirred solution of 2-iodo-5-bromopyrimidine (7.7 g, 27.4 mmol) in tetrahydrofuran (70 mL) at -78 °C. The resultant yellow solution was stirred at -78 °C for 30 min and then treated with *N,N*-dimethylformamide (21.2 ml, 273 mmol). The solution was allowed to warm slowly and then stirred at room temperature for 2 hours to give a crude solution of the intermediate 5-bromopyrimidine 2-carboxaldehyde that was used without further purification. The crude solution of intermediate 5-bromopyrimidine 2-carboxaldehyde was diluted with methanol (50 ml) and water (50ml), treated with hydroxylamine hydrochloride (3.77 g, 54.7 mmol) and sodium carbonate (1.74 g, 16.4 mmol), and then stirred at room temperature for 1 hour. The reaction mixture was partitioned between dichloromethane (200 ml) and water (150 ml) and the organic phase was separated. The aqueous phase was washed with dichloromethane (2 x 200 ml) and the organic phases were combined, dried over sodium sulfate, filtered, and concentrated *in vacuo* to give an involatile residue of crude intermediate 5-bromopyrimidine 2-carboxaldehyde oxime that was used without further purification. A stirred mixture of the involatile residue of the unpurified 5-bromopyrimidine 2-carboxaldehyde oxime and allyl alcohol (7.5 ml, 109 mmol) in tetrahydrofuran (100 ml) was treated with bleach (Clorox, 6.15% NaOCl; 195 ml, 136 mmol) and then stirred at room temperature for two hours. The reaction mixture was followed by extraction with tetrahydrofuran (2x250 ml) and the organic phases were combined and concentrated. The involatile residue was purified by chromatography on silica gel [elution with 1:1 hexane:ethyl acetate] to give the title compound (1.5 g).

MS (APCD): 258 (M+1) for C<sub>8</sub>H<sub>8</sub>N<sub>3</sub>O<sub>2</sub>Br

NMR (DMSO-d<sub>6</sub>)  $\delta$ : 3.20-3.56 (m, 4H); 4.82 (m, 1H); 5.02 (m, 1H); 9.09 (s, 2H).

**Example 2. 3-(3-Fluoro-4-{2-(5*RS*)-[5-(hydroxymethyl)-4,5-dihydroisoxazol-3-yl]pyrimidin-5-yl}phenyl)-5-(5*S*)-(acetamidomethyl)-1,3-oxazolidin-2-one**



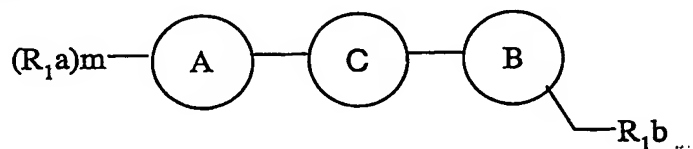
A mixture of (5*S*) 3-[3-fluoro-4-(trimethylstannyl)phenyl]-5-(acetamidomethyl)-1,3-oxazolidin-2-one (177 mg, 0.426 mM) (Dong A Pharm. Co. Ltd., WO 01/94342), (5*RS*)-3-(5-bromopyrimidin-2-yl)-5-hydroxymethyl-4,5-dihydroisoxazole (100 mg, 0.387 mM), tris(dibenzylideneacetone) dipalladium (0)-chloroform adduct (40 mg, 0.039 mM, 0.1 equiv.), and tri-2-furylphosphine (18 mg, 0.077 mM, 0.2 equiv) ) was degassed and maintained under an atmosphere of nitrogen. The mixture was treated with anhydrous dioxane (5 ml) and heated at 95 °C for 12 hours. The reaction mixture was cooled and evaporated under reduced pressure. The involatile residue was purified by chromatography on silica gel [elution with 19:1 dichloromethane:methanol] to give the title compound (30 mg).

MS (APCI): 430 (M+1) for C<sub>20</sub>H<sub>20</sub>N<sub>5</sub>O<sub>5</sub>F

NMR (DMSO-*d*<sub>6</sub>) δ: 1.87 (s, 3H); 3.44-3.80 (m, 7H); 3.81 (dd, 1H); 4.16 (t, 1H); 4.80-4.85 (m, 2H); 5.05 (t, 1H); 7.49 (dd, 1H); 7.68 (dd, 1H); 7.81 (t, 1H); 8.26 (t, 1H); 9.11 (d, 2H).

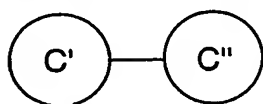
Claims

1. A compound of the formula (I), or a pharmaceutically-acceptable salt, or an in-vivo-hydrolysable ester thereof,

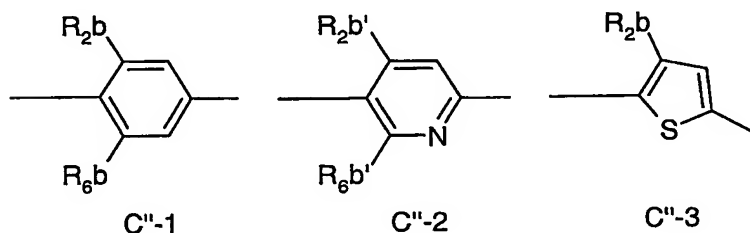


(I)

wherein in (I) C is a biaryl group C'-C''



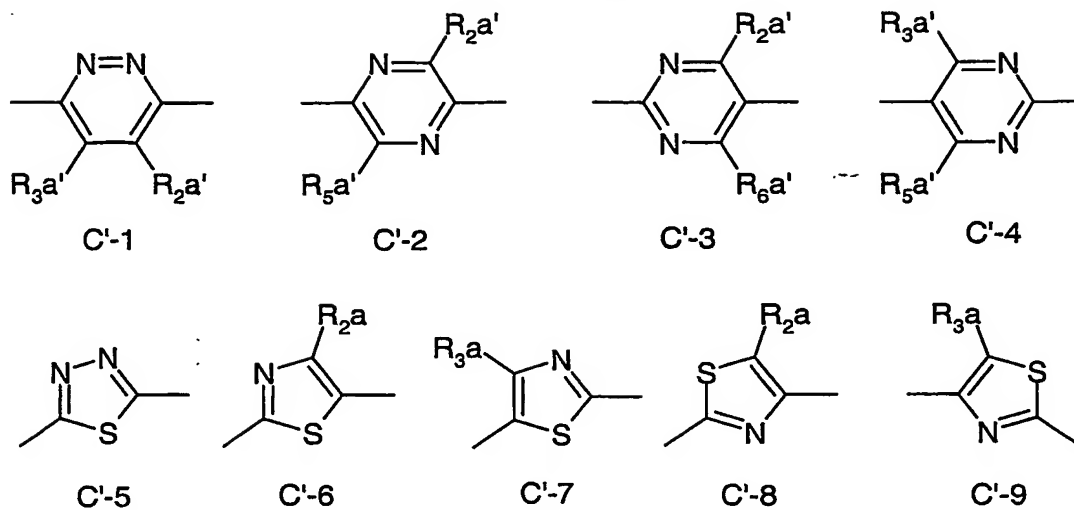
- wherein C'' is an heteroaryl- or aryl-group selected from benzen-1,4-diyl, thien-2,5-diyl, and pyrid-2,5-diyl as shown in C''-1 to C''-3 below



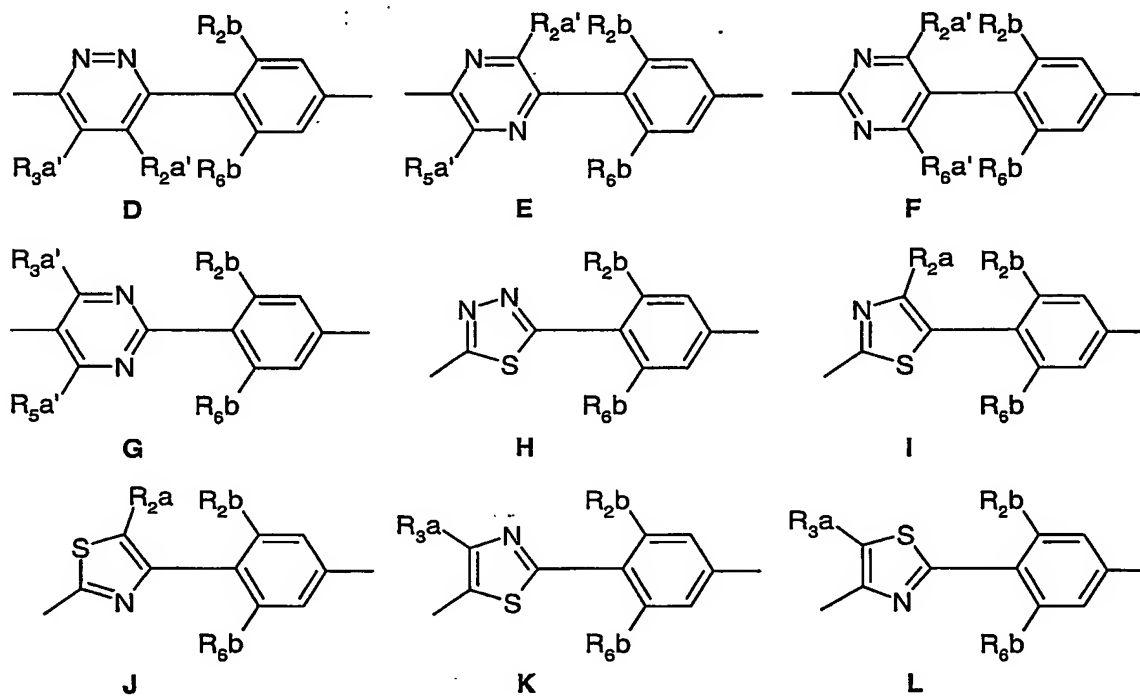
and C' is an heteroaryl-group selected from pyridazin-3,6-diyl, pyrazin-2,5-diyl, pyrimidin-2,5-diyl (in either orientation), 1,3,4-thiadiazol-2,5-diyl, thiazol-2,5-diyl (in either

- orientation), and thiazol-2,4-diyl (in either orientation) as shown in C'-1 to C'-9 below:

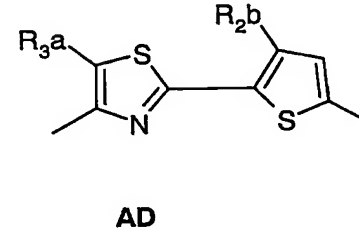
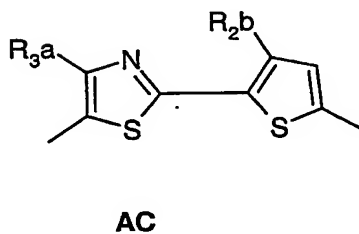
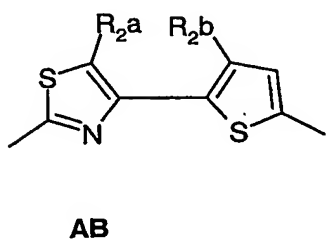
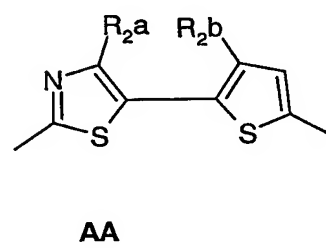
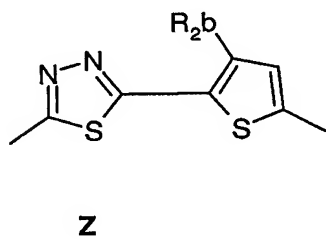
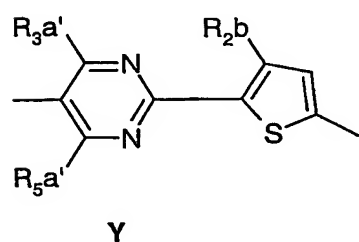
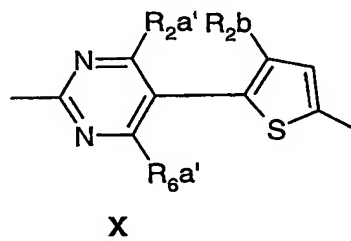
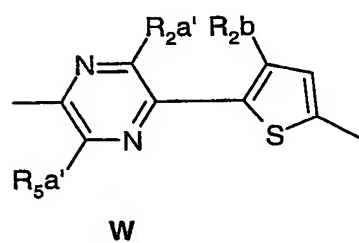
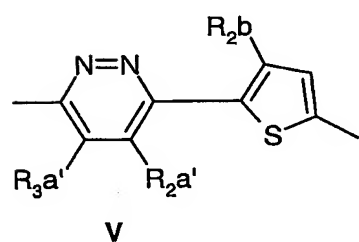
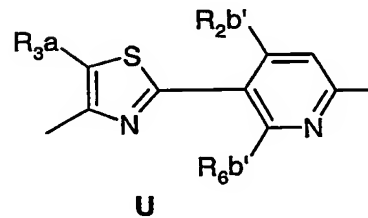
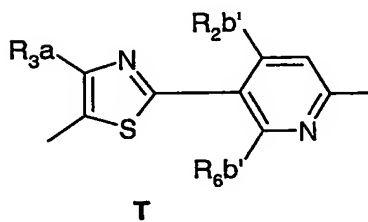
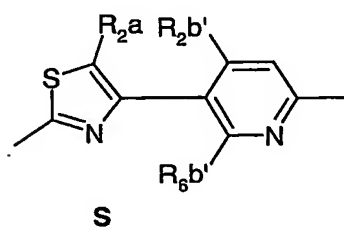
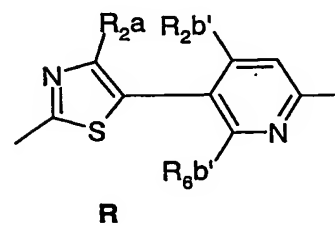
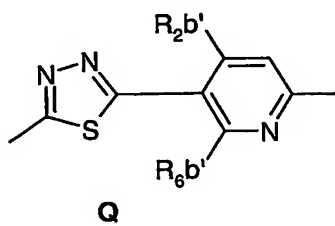
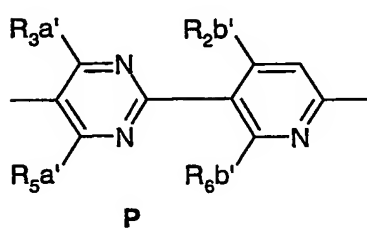
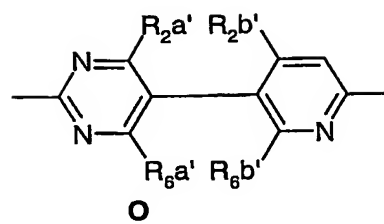
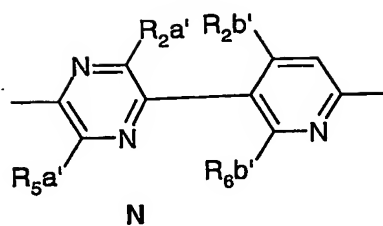
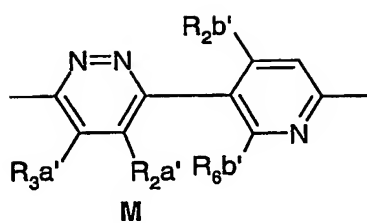
-79-



such that the central fragment C is represented by any one of the groups D to AD below:



-80-



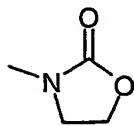
wherein the groups D to AD are attached to rings A and B in the orientation shown [(A-C')

5 and (C''-B)];

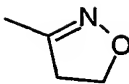
wherein A and B are independently selected from

i)

ii)



and



wherein A is linked as shown in (I) via the 3-position to ring C' of group C and independently substituted in the 4 and 5 positions as shown in (I) by one or more substituents  $-(R_{1a})_m$ ;

5 and wherein B is linked as shown in (I) via the 3-position to ring C'' of group C and independently substituted in the 5 position as shown in (I) by substituent  $-CH_2-R_{1b}$ ;

$R_{2b}$  and  $R_{6b}$  are independently selected from H, F, Cl, OMe, Me, Et and  $CF_3$ ;

$R_{2b'}$  and  $R_{6b'}$  are independently selected from H, OMe, Me, Et and  $CF_3$ ;

$R_{2a}$  is independently selected from H, Br, F, Cl, OMe, SMe, Me, Et and  $CF_3$ ;

10  $R_{2a'}$  and  $R_{6a'}$  are independently selected from H, OMe, SMe, Me, Et and  $CF_3$ ;

$R_{3a}$  is independently selected from H, (1-4C)alkyl, Br, F, Cl, OH, (1-4C)alkoxy,

$-S(O)_n(1-4C)alkyl$  (wherein  $n = 0, 1, \text{ or } 2$ ), amino, (1-4C)alkylcarbonylamino-, nitro, cyano,  $-CHO$ ,  $-CO(1-4C)alkyl$ ,  $-CONH_2$  and  $-CONH(1-4C)alkyl$ ;

$R_{3a'}$  and  $R_{5a'}$  are independently selected from H, (1-4C)alkyl, OH, (1-4C)alkoxy,

15 (1-4C)alkylthio, amino, (1-4C)alkylcarbonylamino-, nitro, cyano,  $-CHO$ ,  $-CO(1-4C)alkyl$ ,  $-CONH_2$  and  $-CONH(1-4C)alkyl$ ;

wherein one of  $R_{3a}$ ,  $R_{3a'}$ ,  $R_{5a'}$  taken together with a substituent  $R_{1a}$  at position 4 of ring A and rings A and C' may form a 5-7 membered ring;

wherein any (1-4C)alkyl group may be optionally substituted with F, OH, (1-4C)alkoxy,

20  $-S(O)_n(1-4C)alkyl$  (wherein  $n = 0, 1, \text{ or } 2$ ) or cyano;

wherein when ring C' is a diazine ring (D, E, F, G, M, N, O, P, V, W, X, Y) one of the ring nitrogens may optionally be oxidised to an N-oxide;

$R_{1a}$  is independently selected from  $R_{1a1}$  to  $R_{1a4}$  below:

$R_{1a1}$ : AR1, AR2, AR2a, AR2b, AR3, AR3a, AR3b, AR4, AR4a, CY1, CY2;

25  $R_{1a2}$ : cyano, carboxy, (1-4C)alkoxycarbonyl,  $-C(=W)NR_vR_w$  [wherein W is O or S,  $R_v$  and  $R_w$  are independently H, or (1-4C)alkyl and wherein  $R_v$  and  $R_w$  taken together with the amide or thioamide nitrogen to which they are attached can form a 5-7 membered ring

optionally with an additional heteroatom selected from N, O,  $S(O)_n$  in place of 1 carbon atom of the so formed ring; wherein when said ring is a piperazine ring, the ring may be optionally

30 substituted on the additional nitrogen by a group selected from (1-4C)alkyl, (1-4C)cycloalkyl, (1-4C)acyl,  $-COO(1-4C)alkyl$ ,  $S(O)_n(1-4C)alkyl$  (wherein  $n = 1 \text{ or } 2$ ),  $-COOAR1$ ,



- CS(1-4C)alkyl and -C(=S)O(1-4C)alkyl; wherein any (1-4C)alkyl, (1-4C)acyl and (1-4C)cycloalkyl substituent may itself be substituted by cyano, hydroxy or halo, provided that, such a substituent is not on a carbon adjacent to a nitrogen atom of the piperazine ring], ethenyl, 2-(1-4C)alkylethenyl, 2-cyanoethenyl, 2-cyano-2-((1-4C)alkyl)ethenyl,
- 5 2-nitroethenyl, 2-nitro-2-((1-4C)alkyl)ethenyl, 2-((1-4C)alkylaminocarbonyl)ethenyl, 2-((1-4C)alkoxycarbonyl)ethenyl, 2-(AR1)ethenyl, 2-(AR2)ethenyl, 2-(AR2a)ethenyl;
- R<sub>1a3</sub>: (1-10C)alkyl  
 {optionally substituted by one or more groups (including geminal disubstitution) each independently selected from hydroxy, (1-10C)alkoxy, (1-4C)alkoxy-(1-4C)alkoxy,
- 10 (1-4C)alkoxy-(1-4C)alkoxy-(1-4C)alkoxy, (1-4C)alkylcarbonyl, phosphoryl [-O-P(O)(OH)<sub>2</sub>, and mono- and di-(1-4C)alkoxy derivatives thereof], phosphiryl [-O-P(OH)<sub>2</sub> and mono- and di-(1-4C)alkoxy derivatives thereof], and amino; and/or optionally substituted by one group selected from carboxy, phosphonate [phosphono, -P(O)(OH)<sub>2</sub>, and mono- and di-(1-4C)alkoxy derivatives thereof], phosphinate [-P(OH)<sub>2</sub> and mono- and di-(1-4C)alkoxy
- 15 derivatives thereof], cyano, halo, trifluoromethyl, (1-4C)alkoxycarbonyl, (1-4C)alkoxy-(1-4C)alkoxycarbonyl, (1-4C)alkoxy-(1-4C)alkoxy-(1-4C)alkoxycarbonyl, (1-4C)alkylamino, di((1-4C)alkyl)amino, (1-6C)alkanoylamino-, (1-4C)alkoxycarbonylamino-, N-(1-4C)alkyl-N-(1-6C)alkanoylamino-, -C(=W)NR<sub>v</sub>R<sub>w</sub> [wherein W is O or S, R<sub>v</sub> and R<sub>w</sub> are independently H, or (1-4C)alkyl and wherein R<sub>v</sub> and R<sub>w</sub> taken together with the amide or
- 20 thioamide nitrogen to which they are attached can form a 5-7 membered ring optionally with an additional heteroatom selected from N, O, S(O)<sub>n</sub> in place of 1 carbon atom of the so formed ring; wherein when said ring is a piperazine ring, the ring may be optionally substituted on the additional nitrogen by a group selected from (1-4C)alkyl, (1-4C)cycloalkyl, (1-4C)acyl, -COO(1-4C)alkyl, S(O)<sub>n</sub>(1-4C)alkyl (wherein n = 1 or 2), -COOAR1,
- 25 -CS(1-4C)alkyl and -C(=S)O(1-4C)alkyl; (=NOR<sub>v</sub>) wherein R<sub>v</sub> is as hereinbefore defined, (1-4C)alkylS(O)<sub>p</sub>NH-, (1-4C)alkylS(O)<sub>p</sub>-((1-4C)alkyl)N-, fluoro(1-4C)alkylS(O)<sub>p</sub>NH-, fluoro(1-4C)alkylS(O)<sub>p</sub>((1-4C)alkyl)N-, (1-4C)alkylS(O)<sub>q</sub>-, CY1, CY2, AR1, AR2, AR3, AR1-O-, AR2-O-, AR3-O-, AR1-S(O)<sub>q</sub>-, AR2-S(O)<sub>q</sub>-, AR3-S(O)<sub>q</sub>-, AR1-NH-, AR2-NH-, AR3-NH- (p is 1 or 2 and q is 0; 1 or 2), and also AR2a, AR2b, AR3a and AR3b versions of
- 30 AR2 and AR3 containing groups}; wherein any (1-4C)alkyl, (1-4C)acyl and (1-4C)cycloalkyl group present in any substituent on R<sub>1a3</sub> may itself be substituted by one or two groups selected from cyano, hydroxy, halo, amino, (1-4C)alkylamino and di(1-4C)alkylamino, provided that such a substituent is not on a carbon adjacent to a heteroatom if present;

$R_{14}4$ :  $R_{14}C(O)O(1-6C)alkyl$  wherein  $R_{14}$  is  $AR1$ ,  $AR2$ ,  $AR2a$ ,  $AR2b$ ,  $(1-4C)alkylamino$ , benzyloxy- $(1-4C)alkyl$  or  $(1-10C)alkyl$  {optionally substituted as defined for  $(R_{1a}3)$ };

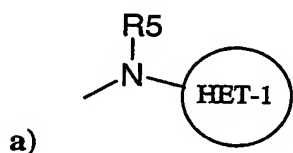
$m$  is 0, 1 or 2;

wherein two substituents  $R_{1a}$  at the 4 or 5 position of ring A taken together may form a 5 to 7 membered spiro ring;

wherein two substituents  $R_{1a}$  at the 4 and 5 positions of ring A taken together may form a 5 to 7 membered fused ring;

$R_{1b}$  is independently selected from hydroxy,  $-OSi(tri-(1-6C)alkyl)$  (wherein the 3  $(1-6C)alkyl$  groups are independently selected from all possible  $(1-6C)alkyl$  groups),  $-NR_5C(=W)R_4$ ,

10  $-OC(=O)R_4$ ,

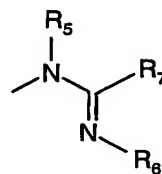


b)



and

c)



wherein  $W$  is O or S;

15  $R_4$  is hydrogen, amino,  $(1-8C)alkyl$ ,  $-NHR_{12}$ ,  $-N(R_{12})(R_{13})$ ,  $-OR_{12}$  or  $-SR_{12}$ ,  $(2-4C)alkenyl$ ,  $-(1-8C)alkylaryl$ , mono-, di-, tri- and per-halo $(1-8C)alkyl$ ,  $-(CH_2)_p(3-6C)cycloalkyl$  or  $-(CH_2)_p(3-6C)cycloalkenyl$  wherein  $p$  is 0, 1 or 2;

$R_5$  is hydrogen,  $(3-6C)cycloalkyl$ , phenyloxycarbonyl, tert-butoxycarbonyl,

fluorenyloxycarbonyl, benzyloxycarbonyl,  $(1-6C)alkyl$  (optionally substituted by cyano or

20  $(1-4C)alkoxycarbonyl$ ),  $-CO_2R_8$ ,  $-C(=O)R_8$ ,  $-C(=O)SR_8$ ,  $-C(=S)R_8$ ,  $P(O)(OR_9)(OR_{10})$  and  $-SO_2R_{11}$ , wherein  $R_8$ ,  $R_9$ ,  $R_{10}$  and  $R_{11}$  are as defined hereinbelow;

HET-1 is selected from HET-1A and HET-1B wherein:

HET-1A is a C-linked 5-membered heteroaryl ring containing 2 to 4 heteroatoms

independently selected from N, O and S; which ring is optionally substituted on a C atom by

25 an oxo or thioxo group; and/or which ring is optionally substituted on any available C atom by one or two substituents selected from RT as hereinafter defined and/or on an available nitrogen atom, (provided that the ring is not thereby quaternised) by  $(1-4C)alkyl$ ;

HET-1B is a C-linked 6-membered heteroaryl ring containing 2 or 3 nitrogen heteroatoms,

which ring is optionally substituted on a C atom by an oxo or thioxo group; and/or which ring

30 is optionally substituted on any available C atom by one, two or three substituents selected

from RT as hereinafter defined and/or on an available nitrogen atom, (provided that the ring is not thereby quaternised) by (1-4C)alkyl;

HET-2 is selected from HET-2A and HET-2B wherein

HET- 2A is an N-linked 5-membered, fully or partially unsaturated heterocyclic ring,

5 containing either (i) 1 to 3 further nitrogen heteroatoms or (ii) a further heteroatom selected from O and S together with an optional further nitrogen heteroatom; which ring is optionally substituted on a C atom, other than a C atom adjacent to the linking N atom, by an oxo or thioxo group; and/or which ring is optionally substituted on any available C atom, other than a C atom adjacent to the linking N atom, by a substituent selected from RT as hereinafter

10 defined and/or on an available nitrogen atom, other than a N atom adjacent to the linking N atom, (provided that the ring is not thereby quaternised) by (1-4C)alkyl;

HET-2B is an N-linked 6-membered di-hydro-heteroaryl ring containing up to three nitrogen heteroatoms in total (including the linking heteroatom), which ring is substituted on a suitable C atom, other than a C atom adjacent to the linking N atom, by oxo or thioxo and/or which

15 ring is optionally substituted on any available C atom, other than a C atom adjacent to the linking N atom, by one or two substituents independently selected from RT as hereinafter defined and/or on an available nitrogen atom, other than a N atom adjacent to the linking N atom, (provided that the ring is not thereby quaternised) by (1-4C)alkyl;

RT is selected from a substituent from the group:

20 (RTa1) hydrogen, halogen, (1-4C)alkoxy, (2-4C)alkenyloxy, (2-4C)alkenyl, (2-4C)alkynyl, (3-6C)cycloalkyl, (3-6C)cycloalkenyl, (1-4C)alkylthio, amino, azido, cyano and nitro; or

(RTa2) (1-4C)alkylamino, di-(1-4C)alkylamino, and (2-4C)alkenylamino;

or RT is selected from the group

25 (RTb1) (1-4C)alkyl group which is optionally substituted by one substituent selected from hydroxy, (1-4C)alkoxy, (1-4C)alkylthio, cyano and azido; or

(RTb2) (1-4C)alkyl group which is optionally substituted by one substituent selected from (2-4C)alkenyloxy, (3-6C)cycloalkyl, and (3-6C)cycloalkenyl;

or RT is selected from the group

30 (RTc) a fully saturated 4-membered monocyclic ring containing 1 or 2 heteroatoms independently selected from O, N and S (optionally oxidised), and linked via a ring nitrogen or carbon atom;

and wherein at each occurrence of an RT substituent containing an alkyl, alkenyl, alkynyl, cycloalkyl or cycloalkenyl moiety in (RTa1) or (RTa2), (RTb1) or (RTb2), or (RTc) each such moiety is optionally substituted on an available carbon atom with one, two, three or more substituents independently selected from F, Cl, Br, OH and CN;

- 5  $R_6$  is cyano,  $-\text{COR}_{12}$ ,  $-\text{COOR}_{12}$ ,  $-\text{CONHR}_{12}$ ,  $-\text{CON}(\text{R}_{12})(\text{R}_{13})$ ,  $-\text{SO}_2\text{R}_{12}$ ,  $-\text{SO}_2\text{NHR}_{12}$ ,  $-\text{SO}_2\text{N}(\text{R}_{12})(\text{R}_{13})$  or  $\text{NO}_2$ , wherein  $\text{R}_{12}$  and  $\text{R}_{13}$  are as defined hereinbelow;
- $R_7$  is hydrogen, amino, (1-8C)alkyl,  $-\text{NHR}_{12}$ ,  $-\text{N}(\text{R}_{12})(\text{R}_{13})$ ,  $-\text{OR}_{12}$  or  $-\text{SR}_{12}$ , (2-4C)alkenyl, (1-8C)alkylaryl, mono-, di-, tri- and per-halo(1-8C)alkyl,  $-(\text{CH}_2)_p(3-6\text{C})\text{cycloalkyl}$  or  $-(\text{CH}_2)_p(3-6\text{C})\text{cycloalkenyl}$  wherein  $p$  is 0, 1 or 2;
- 10  $R_8$  is hydrogen, (3-6C)cycloalkyl, phenyl, benzyl, (1-5C)alkanoyl, (1-6C)alkyl (optionally substituted by substituents independently selected from (1-5C)alkoxycarbonyl, hydroxy, cyano, up to 3 halogen atoms and  $-\text{NR}_{15}\text{R}_{16}$  (wherein  $\text{R}_{15}$  and  $\text{R}_{16}$  are independently selected from hydrogen, phenyl (optionally substituted with one or more substituents selected from halogen, (1-4C)alkyl and (1-4C)alkyl substituted with one, two, three or more halogen atoms)
- 15 and (1-4C)alkyl (optionally substituted with one, two, three or more halogen atoms), or for any  $\text{N}(\text{R}_{15})(\text{R}_{16})$  group,  $\text{R}_{15}$  and  $\text{R}_{16}$  may additionally be taken together with the nitrogen atom to which they are attached to form a pyrrolidinyl, piperidinyl or morpholinyl ring);
- $R_9$  and  $R_{10}$  are independently selected from hydrogen and (1-4C)alkyl;
- $R_{11}$  is (1-4C)alkyl or phenyl;
- 20  $R_{12}$  and  $R_{13}$  are independently selected from hydrogen, phenyl (optionally substituted with one or more substituents selected from halogen, (1-4C)alkyl and (1-4C)alkyl substituted with one, two, three or more halogen atoms) and (1-4C)alkyl (optionally substituted with one, two, three or more halogen atoms), or for any  $\text{N}(\text{R}_{12})(\text{R}_{13})$  group,  $\text{R}_{12}$  and  $\text{R}_{13}$  may additionally be taken together with the nitrogen atom to which they are attached to form an unsubstituted or
- 25 substituted pyrrolidinyl, piperidinyl or morpholinyl ring, which ring may be optionally substituted by a group selected from (1-4C)alkyl, (1-4C)cycloalkyl, (1-4C)acyl,  $-\text{COO}(1-4\text{C})\text{alkyl}$ ,  $\text{S}(\text{O})_n(1-4\text{C})\text{alkyl}$  (wherein  $n = 1$  or  $2$ ),  $-\text{COOAR1}$ ,  $-\text{CS}(1-4\text{C})\text{alkyl}$  and  $-\text{C}(=\text{S})\text{O}(1-4\text{C})\text{alkyl}$ ;
- AR1** is an optionally substituted phenyl or optionally substituted naphthyl;
- 30 **AR2** is an optionally substituted 5- or 6-membered, fully unsaturated (i.e with the maximum degree of unsaturation) monocyclic heteroaryl ring containing up to four heteroatoms independently selected from O, N and S (but not containing any O-O, O-S or S-S bonds), and linked via a ring carbon atom, or a ring nitrogen atom if the ring is not thereby quaternised;

**AR2a** is a partially hydrogenated version of AR2 (i.e. AR2 systems retaining some, but not the full, degree of unsaturation), linked via a ring carbon atom or linked via a ring nitrogen atom if the ring is not thereby quaternised;

**AR2b** is a fully hydrogenated version of AR2 (i.e. AR2 systems having no unsaturation),

- 5 linked via a ring carbon atom or linked via a ring nitrogen atom;

**AR3** is an optionally substituted 8-, 9- or 10-membered, fully unsaturated (i.e. with the maximum degree of unsaturation) bicyclic heteroaryl ring containing up to four heteroatoms independently selected from O, N and S (but not containing any O-O, O-S or S-S bonds), and linked via a ring carbon atom in either of the rings comprising the bicyclic system;

- 10 **AR3a** is a partially hydrogenated version of AR3 (i.e. AR3 systems retaining some, but not the full, degree of unsaturation), linked via a ring carbon atom, or linked via a ring nitrogen atom if the ring is not thereby quaternised, in either of the rings comprising the bicyclic system;

**AR3b** is a fully hydrogenated version of AR3 (i.e. AR3 systems having no unsaturation),

- 15 linked via a ring carbon atom, or linked via a ring nitrogen atom, in either of the rings comprising the bicyclic system;

**AR4** is an optionally substituted 13- or 14-membered, fully unsaturated (i.e. with the maximum degree of unsaturation) tricyclic heteroaryl ring containing up to four heteroatoms independently selected from O, N and S (but not containing any O-O, O-S or S-S bonds), and

- 20 linked via a ring carbon atom in any of the rings comprising the tricyclic system;

**AR4a** is a partially hydrogenated version of AR4 (i.e. AR4 systems retaining some, but not the full, degree of unsaturation), linked via a ring carbon atom, or linked via a ring nitrogen atom if the ring is not thereby quaternised, in any of the rings comprising the tricyclic system;

**CY1** is an optionally substituted cyclobutyl, cyclopentyl or cyclohexyl ring;

- 25 **CY2** is an optionally substituted cyclopentenyl or cyclohexenyl ring;

wherein; optional substituents on AR1, AR2, AR2a, AR2b, AR3, AR3a, AR3b, AR4, AR4a, CY1 and CY2 are (on an available carbon atom) up to three substituents independently selected from (1-4C)alkyl {optionally substituted by substituents selected independently from hydroxy, trifluoromethyl, (1-4C)alkyl S(O)<sub>q</sub> (q is 0, 1 or 2), (1-4C)alkoxy,

- 30 (1-4C)alkoxycarbonyl, cyano, nitro, (1-4C)alkanoylamino, -CONR<sub>v</sub>R<sub>w</sub> or -NR<sub>v</sub>R<sub>w</sub>}, trifluoromethyl, hydroxy, halo, nitro, cyano, thiol, (1-4C)alkoxy, (1-4C)alkanoyloxy, dimethylaminomethyleneaminocarbonyl, di(N-(1-4C)alkyl)aminomethylimino, carboxy,

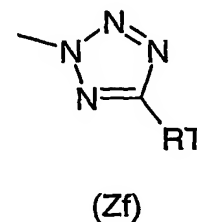
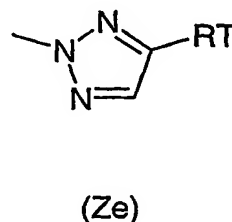
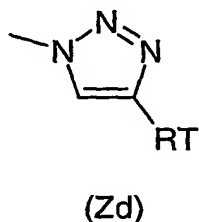
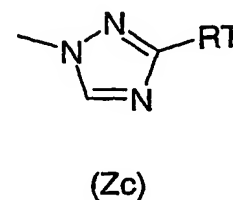
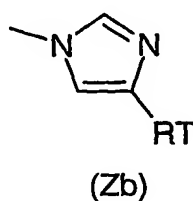
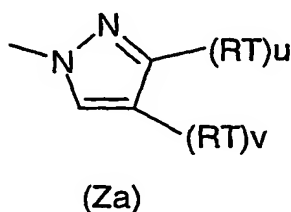
(1-4C)alkoxycarbonyl, (1-4C)alkanoyl, (1-4C)alkylSO<sub>2</sub>amino, (2-4C)alkenyl {optionally substituted by carboxy or (1-4C)alkoxycarbonyl}, (2-4C)alkynyl, (1-4C)alkanoylamino, oxo (=O), thioxo (=S), (1-4C)alkanoylamino {the (1-4C)alkanoyl group being optionally substituted by hydroxy}, (1-4C)alkyl S(O)<sub>q</sub>- (q is 0, 1 or 2) {the (1-4C)alkyl group being optionally substituted by one or more groups independently selected from cyano, hydroxy and (1-4C)alkoxy}, -CONR<sub>v</sub>R<sub>w</sub> or -NR<sub>v</sub>R<sub>w</sub> [wherein R<sub>v</sub> is hydrogen or (1-4C)alkyl; R<sub>w</sub> is hydrogen or (1-4C)alkyl]; and further optional substituents on AR1, AR2, AR2a, AR2b, AR3, AR3a, AR3b, AR4, AR4a, CY1 and CY2 (on an available carbon atom), and also on alkyl groups (unless indicated otherwise) are up to three substituents independently selected from trifluoromethoxy, benzoylamino, benzoyl, phenyl {optionally substituted by up to three substituents independently selected from halo, (1-4C)alkoxy or cyano}, furan, pyrrole, pyrazole, imidazole, triazole, pyrimidine, pyridazine, pyridine, isoxazole, oxazole, isothiazole, thiazole, thiophene, hydroxyimino(1-4C)alkyl, (1-4C)alkoxyimino(1-4C)alkyl, halo-(1-4C)alkyl, (1-4C)alkanesulfonamido, -SO<sub>2</sub>NR<sub>v</sub>R<sub>w</sub> [wherein R<sub>v</sub> is hydrogen or (1-4C)alkyl; R<sub>w</sub> is hydrogen or (1-4C)alkyl]; and optional substituents on AR2, AR2a, AR2b, AR3, AR3a, AR3b, AR4 and AR4a are (on an available nitrogen atom, where such substitution does not result in quaternization) (1-4C)alkyl, (1-4C)alkanoyl {wherein the (1-4C)alkyl and (1-4C)alkanoyl groups are optionally substituted by (preferably one) substituents independently selected from cyano, hydroxy, nitro, trifluoromethyl, (1-4C)alkyl S(O)<sub>q</sub>- (q is 0, 1 or 2), (1-4C)alkoxy, (1-4C)alkoxycarbonyl, (1-4C)alkanoylamino, -CONR<sub>v</sub>R<sub>w</sub> or -NR<sub>v</sub>R<sub>w</sub> [wherein R<sub>v</sub> is hydrogen or (1-4C)alkyl; R<sub>w</sub> is hydrogen or (1-4C)alkyl]}, (2-4C)alkenyl, (2-4C)alkynyl, (1-4C)alkoxycarbonyl or oxo (to form an N-oxide).

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2. A compound of the formula (I) or a pharmaceutically-acceptable salt, or in-vivo hydrolysable ester thereof, as claimed in claim 1, wherein group C is selected from groups F, H and I.

30 3. A compound of the formula (I) or a pharmaceutically-acceptable salt, or in-vivo hydrolysable ester thereof, as claimed in claim 1 or claim 2, wherein R<sub>1a</sub> and R<sub>1b</sub> are independently selected from -NHCO(1-4C)alkyl, -NHCO(1-4C)cycloalkyl, -NHCS(1-4C)alkyl, -N(R<sub>5</sub>)-HET-1 and HET-2.

4. A compound of the formula (I) or a pharmaceutically-acceptable salt, or in-vivo hydrolysable ester thereof, as claimed in claim 1, claim 2 or claim 3, wherein HET-2A is selected from the structures (Za) to (Zf) below:

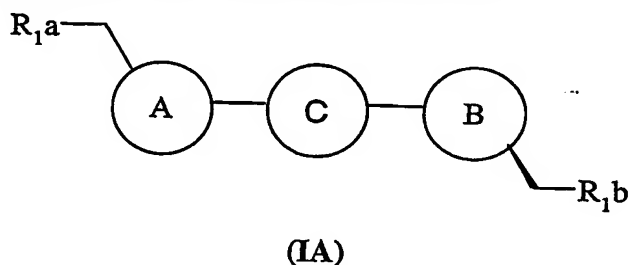


wherein u and v are independently 0 or 1.

5. A compound of the formula (I) or a pharmaceutically-acceptable salt, or in-vivo hydrolysable ester thereof, as claimed in claim 4 wherein RT is selected from
- (a) hydrogen;
  - (b) halogen, in particular fluorine, chlorine, or bromine;
  - (c) cyano;
  - (d) (1-4C)alkyl, in particular methyl;
  - (e) monosubstituted (1-4C)alkyl, in particular fluoromethyl, chloromethyl, bromomethyl, cyanomethyl, azidomethyl, hydroxymethyl;
  - (f) disubstituted (1-4C)alkyl, for example difluoromethyl, and trisubstituted (1-4C)alkyl, for example trifluoromethyl.
6. A compound of the formula (I) or a pharmaceutically-acceptable salt, or in-vivo hydrolysable ester thereof, as claimed in any preceding claim wherein at least one of A and B is an oxazolidinone.
7. A compound of the formula (I) or a pharmaceutically-acceptable salt, or in-vivo

hydrolysable ester thereof, as claimed in any preceding claim wherein both A and B are oxazolidinones.

8. A compound of the formula (IA) or a pharmaceutically-acceptable salt, or in-vivo hydrolysable ester thereof, as claimed in any preceding claim.

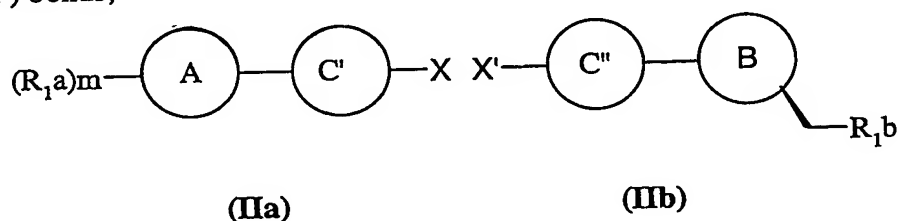


9. A pro-drug of a compound as claimed in any one of the preceding claims.
10. A method for producing an antibacterial effect in a warm blooded animal which comprises administering to said animal an effective amount of a compound of the invention as claimed in any one of claims 1 to 8, or a pharmaceutically-acceptable salt, or in-vivo hydrolysable ester thereof.
11. A compound of the invention as claimed in any one of claims 1 to 8, or a pharmaceutically-acceptable salt, or in-vivo hydrolysable ester thereof, for use as a medicament.
12. The use of a compound of the invention as claimed in any one of claims 1 to 8, or a pharmaceutically-acceptable salt, or in-vivo hydrolysable ester thereof, in the manufacture of a medicament for use in the production of an antibacterial effect in a warm blooded animal.
13. A pharmaceutical composition which comprises a compound of the invention as claimed in any one of claims 1 to 8, or a pharmaceutically-acceptable salt or an in-vivo hydrolysable ester thereof, and a pharmaceutically-acceptable diluent or carrier.
14. A process for the preparation of a compound of formula (I) as claimed in claim 1 or pharmaceutically acceptable salts or in-vivo hydrolysable esters thereof, which process comprises one of processes (a) to (h):



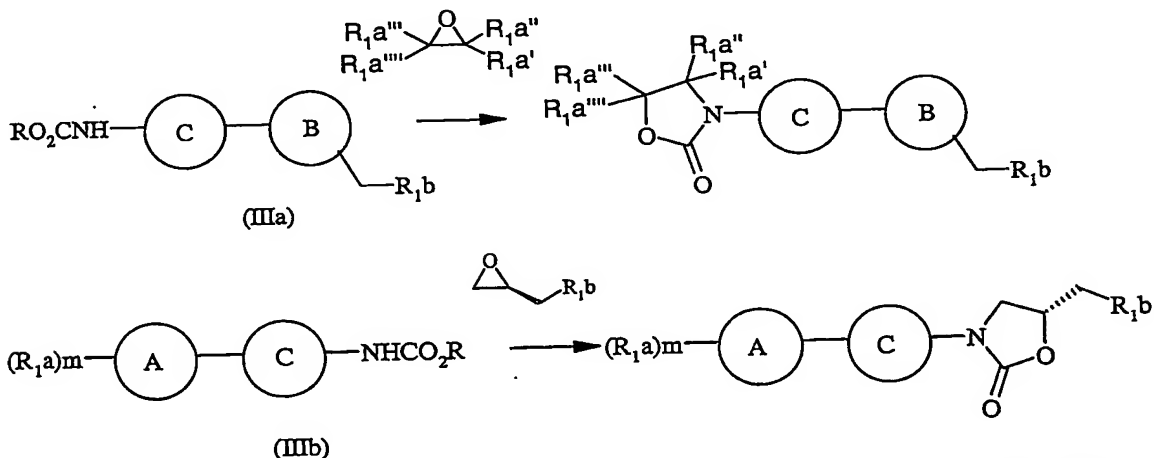
(a) by modifying a substituent in, or introducing a substituent into another compound of the invention;

(b) by reaction of a molecule of a compound of formula (IIa) (wherein X is a leaving group useful in palladium coupling) with a molecule of a compound of formula (IIb) (wherein X' is a leaving group useful in palladium coupling) wherein X and X' are chosen such that an heteroaryl-aryl, or heteroaryl-heteroaryl bond replaces the heteroaryl-X and aryl-X' (or heteroaryl-X') bonds;



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(c) by reaction of a (hetero)biaryl derivative (IIIa) or (IIIb) carbamate with an appropriately substituted oxirane (wherein 0, 1, or 2 of  $R_{1a}'$ - $R_{1a}''''$  are substituents as defined for  $R_{1a}$  and the remainder are hydrogen) to form an oxazolidinone ring at the undeveloped aryl position.



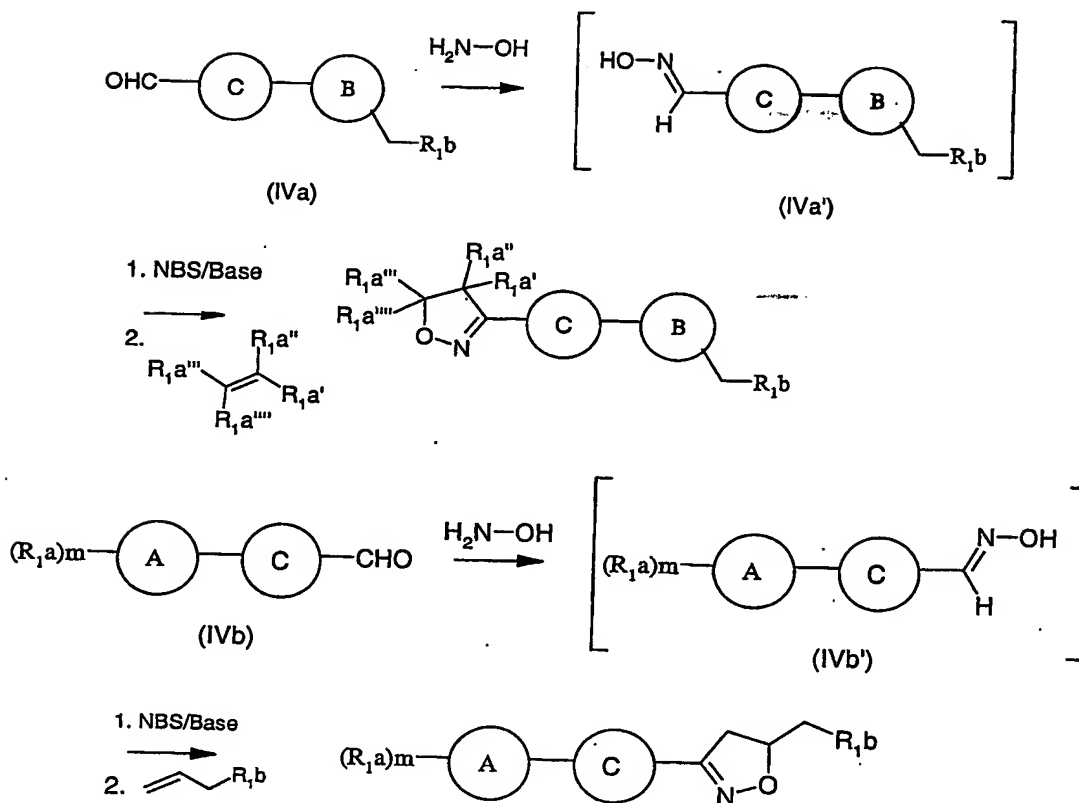
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or by variations on this process in which the carbamate is replaced by an isocyanate or by an amine or/and in which the oxirane is replaced by an equivalent reagent X-

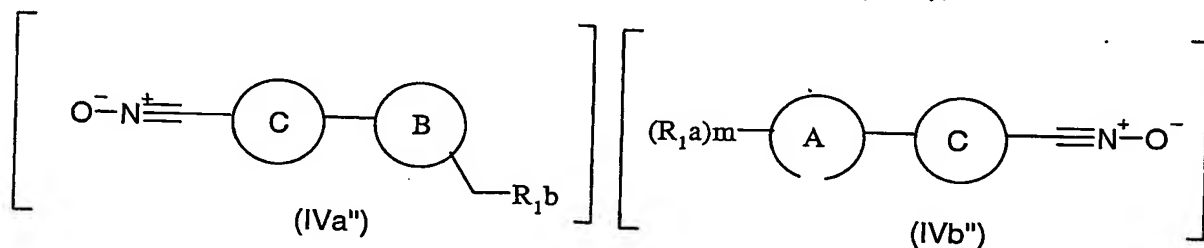
$\text{C}(R_{1a}')(\text{R}_{1a}'')\text{C}(\text{R}_{1a}''')(\text{O-optionally protected})(\text{R}_{1a}''')$  or  $\text{X-CH}_2\text{CH}(\text{O-optionally}$

protected) $\text{CH}_2\text{R}_{1b}$  where X is a displaceable group;

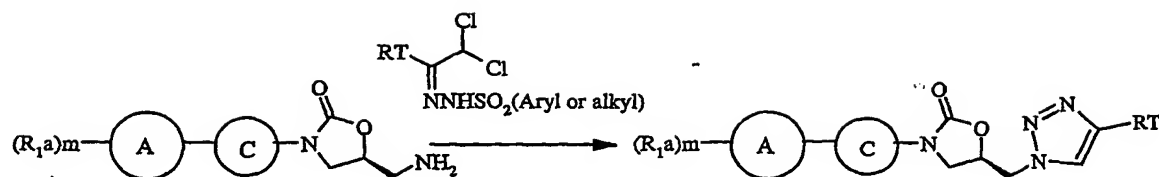
(d) by reaction of a (hetero)biaryl derivative (IVa) or (IVb) to form an isoxazoline ring at the undeveloped aryl position;



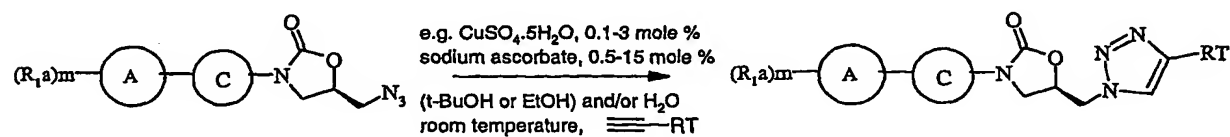
or by variations on this process in which the reactive intermediate (a nitrile oxide IVa'' or IVb'') is obtained other than by oxidation of an oxime (IVa') or (IVb');



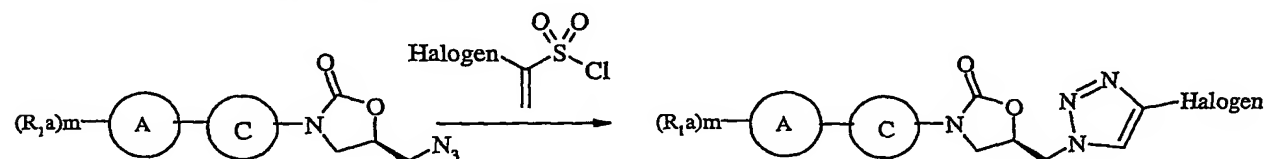
- (e) for HET2 as optionally substituted 1,2,3-triazoles, by cycloaddition via the azide (wherein the substituent at the position of R<sub>1a</sub> in (I) is azide) to acetylenes, or to acetylene equivalents such as optionally substituted cyclohexa-1,4-dienes or optionally substituted ethylenes bearing eliminatable substituents such as arylsulfonyl;
- (f) for HET2 as 4-substituted 1,2,3-triazole, by reacting aminomethyloxazolidinones with 1,1-dihaloketone sulfonylhydrazones;



(g) for HET2 as 4-substituted 1,2,3-triazole, by reacting azidomethyl oxazolidinones with terminal alkynes using Cu(I) catalysis;



5 (h) for HET2 as 4-halogenated 1,2,3-triazole, by reacting azidomethyl oxazolidinones with halovinylsulfonyl chlorides at a temperature between 0 °C and 100 °C either neat or in an inert diluent such as chlorobenzene, chloroform or dioxan.



PCT Application

**GB0305448**



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